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ABSTRACT

The relationship between education and job satisfaction is investigated and defined in social-psychological terms in this report. The objective of the research was to test the assumption that the better an individual's education, the greater his chances of securing a desired and satisfying job. The authors found a general scarcity of specific information on this relationship and employed two sources of related information in their research. First, they analyzed 16 previous studies which dealt with the relationship between the two variables. Second, they examined secondary analyses of nine national surveys of the American work force. Findings for noncollege trained workers indicated that no increment in job satisfaction exists with each succeeding year of education and that no relationship exists between educational level and job satisfaction. Also indicated was that those persons who had obtained college degrees were consistently more satisfied with their jobs than were other workers. On the basis of these and other findings, the report concludes with a series of six recommendations for future research and policy changes. They include investigating the occupational needs of overeducated workers, reexamining the educational requirements for jobs, and redesigning jobs. The authors developed a social-psychological model to help them understand the relationship between education and job satisfaction. In this model, they reasoned that educational level should be positively related to quality of employment (how good one's pay is, how convenient the hours are, how interesting the work is). (Author/DB)

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Education and Job Satisfaction: A Questionable Payoff

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Some of the findings reported in this document have previously been reported by the authors at the 1975 annual meetings of the American Sociological Association.

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SUMMARY

This report attempts to answer two questions: What is the relationship between education and job satisfaction? How may this relationship be understood in social-psychological terms?

Two sources of information were used to answer these questions: previously published research bearing either directly or indirectly upon the relationship between education and job satisfaction; and secondary analyses of nine national surveys that had been designed for purposes other than understanding the relationship between education and job satisfaction.

Sixteen previous studies were identified that dealt directly with the relationship between education and job satisfaction. Five of these found a positive association between the two variables, three found a negative association, and the remaining eight reported the relationship to be either nonexistent or equivocal.

Since almost all of these 16 studies had sampled from limited populations, secondary analyses were performed on the data obtained in nine national surveys of the American work force conducted between 1962 and 1973. Since some of these surveys provided more than one measure of job satisfaction, there were twelve separate estimates of the correlation between level of education and job satisfaction. All of the observed relationships were modest at best, the correlations never exceeding .12. There was clearly no increment in job satisfaction with each succeeding year of education. No relationship was found between education level and job satisfaction among workers who had not gone to college, but those who had obtained college degrees were consistently more satisfied with their jobs than were others. All save one of the surveys identified a college "credentials effect"--that is, there was no payoff from having college training unless one also received a college degree.

When satisfaction with specific facets of jobs was examined, education level was found to be significantly related only to satisfaction with the financial rewards provided by jobs and to how challenging and self-developing these jobs were.

Two of the national surveys provided estimates of the quality of workers' secondary school educations. In none of these surveys was quality of education related to job satisfaction.

Four measures of education level were developed that expressed a worker's education in relative rather than absolute terms. The number of years of education a worker had attained was measured relative to: that required by his or her occupation as indicated in the Dictionary of Occupational Titles; that which the worker felt was needed by his or her job; that of others in the worker's occupation; that attained by others in his or her work group. Education level expressed in these relative terms was a better predictor of job satisfaction than was absolute level of education. The most dissatisfied workers were those who were too highly educated for their jobs.

The social-psychological model developed to understand the relationship between education and job satisfaction suggested that to the extent that education was rewarded occupationally, education level should be positively related to quality of employment. Moreover, this relationship should be stronger than that between education level and job satisfaction. The data indicated that both inferences were correct. Education level was significantly and positively related to overall quality of employment, with the greatest increments in quality of employment occurring at those points where educational credentials were conferred. Particularly associated with education level were quality of employment with respect to financial rewards and to the amount of challenge provided by one's job. Additional analyses indicated that the small observed amount of change in job satisfaction associated with a unit of change in education was provided mostly through the intervening effects of quality of employment. In other words, education appeared to have little direct effect upon job satisfaction. Its effect was instead an indirect one, with education providing workers with generally "better," and hence more satisfying, jobs.

Education level also appeared to be associated with the importance that workers attached to various aspects of their jobs. It was not clear from the data, however, whether these associations represented the direct effects of education or could be explained instead by the intervening effects of quality of employment.

On the basis of these and other findings, the report concludes with a series of recommendations for future research and for policy changes on the part of employers and educators. Among the latter policy recommendations are:

1. Both employers and educators should pay greater attention to the occupational needs of the overeducated. The economic and educational systems are faced with simultaneous problems of inadequacy and excess: the older, lingering problem of numbers of people not being sufficiently well-trained to secure steady, satisfying employment and the emerging problem of overeducation.

2. Employers should re-examine the educational requirements they establish for jobs. Requirements should be based upon skills acquired rather than diplomas secured. Further in need of modification are educational requirements for job entry that are greater than those needed for satisfactory performance.

3. Employers should redesign jobs to take account of the increasing education level of the American labor force and to accomodate the greater importance that better-educated workers attach to jobs that are challenging and develop the worker's skills.

4. Educators should place less emphasis in primary and secondary schools upon education that is specifically career-oriented. Instead, greater emphasis should be placed upon easily generalizable skills, anticipating that a worker will be making many job changes in life. Occupationally specialized training should be reserved for the times and places it is most needed by workers.

5. Educators should change the implicit contract between the student and the educational system into a lifetime contract. During the early periods of the contract the emphasis should be upon general education and preparing the student to be an effective, responsible adult. Training for specific jobs should be reserved until it becomes necessary for the worker to receive such training, most commonly when the worker begins to contemplate changing his or her job or employer.

6. Educators should stop the "hard sell" to students wherein every unpleasant thing in school is justified in terms of its necessity for getting the student a good job later on. In terms of job satisfaction, the occupational payoffs of education are quite small. To continue representing these and other payoffs as otherwise may only produce an increasingly disillusioned labor force.

AN UNSUBSTANTIATED ASSUMPTION

A widely held assumption is that the better an individual's education, the greater the chances of securing a desired and hence satisfying job. This assumption is often used, for example, to justify changes in schools and in access to schools as ways of reducing social inequities. The relationship between education and job satisfaction has not been sufficiently well demonstrated, however, to qualify as an unquestionable assumption. The magnitude of the relationship, as well as its form and its generality have yet to be established conclusively. Moreover, the social and psychological processes that may link education and job satisfaction are scarcely understood.

This situation is in some respects similar to that concerning returns to educational investment in terms of wages. Where it was once commonly assumed that increasing amounts of education guaranteed progressively higher wages, more recent commentators have begun to question: the magnitude of the relationship between education and wages; the generality of this relationship; whether educational increments at all levels are associated with the same wage increments; and whether education and wages are not causally linked but are the common products of yet other conditions.

The scarcity of information concerning the relationship between education and job satisfaction is particularly surprising considering

how frequently matters of education, work, and job satisfaction have been investigated. Part of this scarcity undoubtedly stems from the justifiably limited foci of these investigations. Work-related studies of education have, for example, tended to be of two types, neither of which has anything to do with job satisfaction. One type emphasizes the impact of such variables as socioeconomic status, race, sex, and age, on educational opportunities and, inferentially, upon the opportunities for entrance into specific types of jobs. The collection of articles in a special 1968 edition of the Harvard Educational Review represents such an approach. The most recent and comprehensive such study, Boudon's (1973) Educational Opportunity and Social Inequality follows along similar lines. A second and frequent perspective has been provided by various manpower studies. These studies, represented by the series conducted by the Organization for Economic Co-operation and Development, characterize the correspondence between supply and demand by keeping track of the number of jobs available that require particular levels of education and particular educational specialties.

For the most part, studies of educational phenomena have placed their attention on the input problem--input into a specific type and level of education--leaving aside the output problem--the consequences of holding a specific educational credential for the access to a specific job or position for the individual. In a recent study, however, Jencks (1972) brings into consideration the input-output problem and its links with the sphere of work, educational achievement, and job related attitudes. This topic, also treated by Berg (1971), moves the focus of attention away from school input and operations to school output

recognized through consequences of schooling for the individual rather than the economic system.

As a result of these concentrations of interest in the area of work and education, little attention has been paid by educationally concerned investigators to job satisfaction and related attitudinal issues. The relevant research has by default fallen largely into the hands of social, industrial, and organizational psychologists. Unfortunately, these psychologists seem to have little interest in education per se. While they genuflect to the necessity of routinely using demographic variables, including education, in their investigations, their explanations of the correlates of such variables tend to be both superficial and unenthusiastic.

A SOCIAL-PSYCHOLOGICAL VIEW OF EDUCATION AND JOB SATISFACTION

Establishing the relationship between education and job satisfaction serves only to lay the groundwork for a more detailed analysis of far more complex and meaningful problems. Knowledge that this relationship has a particular magnitude, form, and generality identifies the existence of a phenomenon without providing any real insight into the processes underlying it. Not pursued in any greater analytic detail, the relationship thus identified not only lacks theoretical relevance but provides little information pertinent to the formulation of educational policies.

Policy-relevant information is more likely to emerge when attention is directed away from whether there <u>is</u> a relationship between education and job satisfaction and directed instead to a better understanding of <u>why</u> such a relationship--or lack of relationship--exists. The statistical association between education and job satisfaction reflects only the result of a complex set of social processes. Effective social action requires a thorough understanding of these processes, not just their results.

A profitable beginning in any research is often made by asking a very naive question. In this instance the question is: why <u>should</u> there be any association between education and job satisfaction? The answer to this question demands a consideration of two related sets of

problems, one primarily psychological and the other primarily sociological.

It is widely assumed by psychologists that there are three distinct factors that contribute to job satisfaction. On the environmental side there is the quality of employment (e.g., how good one's pay is, how convenient the hours are, how interesting the work is). On the personal side, there are the needs, aspirations, and expectations of the worker. There is also the degree of congruence between these two sets of conditions. At times, however, this general theoretical agreement is obscured by confusions of terminology, one investigator referring to "person-environment fit," another to "need satisfaction," another to the "matching of persons with role demands," and so forth.

The three concepts of quality of employment, needs-aspirations-expectations, and the congruence of the two have several educational implications.

First, education may enhance a worker's chances of securing a job where the quality of employment is high. At least two mechanisms may heighten these chances. Education may impart those skills that are demanded by the labor market and therefore give a person an advantageous position in bargaining for jobs with good quality of employment. In addition, most jobs require that a candidate meet minimum educational standards. While not necessarily teaching relevant skills, the educational system may nevertheless confer diplomas and degrees that qualify an individual to meet these standards. Education may thereby increase one's bargaining position in the labor market and the ensuing likelihood that good quality of employment will be secured. Such conjectures,

while plausible and widely accepted, have only recently begun to be examined using aspects of quality of employment other than economic ones (Duncan, 1974).

Education has also been assumed to affect the second component of the psychological calculus of job satisfaction--the needs, aspirations, and expectations of the worker. As a socializing agent the educational system of any society has as its primary function the internalization by those subject to its influence of certain values and norms. These norms will allow them to comply with those patterns of behavior that are required in the performance of specific roles within a specific set of social conditions--e.g., citizen, agent of production, mother, father, or consumer. The individual who is graduated by the system is therefore assumed to have developed certain skills and a related set of value-orientations--both of which may be dependent upon how much education one has attained.

What an individual expects in terms of societal rewards in general and occupational rewards in particular, as well as how much he or she expects when leaving school, is nevertheless subject to modifications throughout life. Most conspicuously, it may be subject to the aspirations held by the changing groups that the individual takes as frames of reference. One relevant finding of the 1969-70 Survey of Working Conditions (Quinn, et al., 1971) was a quite low correlation between education level and job satisfaction. One explanation of this finding, advanced by Jencks (1972), was that

> . . . People evaluate a job by comparing it with other jobs their friends have, not by comparing it with some hypothetical national norm. If this theory were correct we would not expect executives

> to be much more satisfied than unskilled workers. . . . If educated people compare themselves to other people with similar amounts of education, the educated and the uneducated will inevitably turn out equally satisfied or dissatisfied.

Education may also play a role in determining the degree of congruence between working conditions on one hand and the needs, values, and expectations of workers on the other hand. Most fundamentally, education may provide a more sophisticated knowledge of job-seeking techniques. More importantly, it may increase the range of job opportunities available to a worker. Since the range of job opportunities available to a well-educated worker is greater than that available to others, the chances of a well-educated worker securing a job characterized by good quality of employment may therefore be enhanced. But this does not necessarily insure that the well-educated worker will be satisfied with the job that he or she secures from this increased range of job opportunities. Education may have effected so many alterations in the worker's needs, values, and expectations that many jobs, while available, are nevertheless personally unacceptable. A corporate executive is educationally qualified to be a clerk-typist, but whether he or she would be satisfied with this underemployment is dubious. Furthermore, where advanced education develops only highly specialized skills, the range of "acceptable" jobs may in fact be reduced.

A very substantial relationship between education level and job satisfaction might, therefore, be anticipated <u>if</u> education is adequately serving its three work-relevant functions--that is, contributing to quality of employment, to the needs, values, and expectations of workers, and to the degree of congruence between these two sets of conditions. Is

there any reason to think that the American educational system adequately serves all of these functions? The answer to this is "probably not," and the reasons for this answer may lie in certain ambivalences in the relationship between American educational institutions and other aspects of American society. According to Marx, an effective educational system in a capitalist society should be geared toward the generation of people best capable of producing those goods and services required by the economy and by those in control of the economy. A subsidiary role is also played by education in training members of a society to be consumers of these same goods and services. On either count the American educational system could be regarded as inefficient in that its sole concerns are not with training people to be workers and consumers. Other cultural values with noneconomic implications intrude. These values attach to education a worth in excess of its "payoff" in terms of good jobs, emphasizing mainly educational benefits in terms of individual or collective participation and gratification in the society's major institutions. In any event, many aspects of the relationship between work and education--particularly underemployment--can be understood under the assumption of a lack of integration of societal goals. This lack of integration provides the social context within which the psychological processes relevant to job satisfaction will be explored.

OVERVIEW OF THIS REPORT

This report attempts to answer two questions: What is the relationship between education and job satisfaction? How may this relationship be understood in social-psychological terms?

Two sources of information were used to answer these questions: previously published research bearing either directly or indirectly upon the relationship between education and job satisfaction; and secondary analyses of nine national surveys that had been designed for purposes other than understanding the relationship between education and job satisfaction.

The first data to be dealt with in the pages below concern the relationship between level of education and job satisfaction, as indicated both in national surveys of the work force and in studies of workers in more limited occupations or organizations. This relationship is further examined among subsamples of workers distinguished according to race and sex--two bases of occupational discrimination that might reduce, if not overwhelm, the occupational returns of education. The relationship between education and satisfaction with particular aspects of jobs is also examined. The discussion further treats the relationship between job satisfaction and measures of education other than absolute numbers of years or credentials--namely, quality of education and education relative to that of other people and to that needed by one's job.

The remainder of the report considers circumstances that might explain, confound, or moderate the observed relationship between education and job satisfaction. The concepts used to do so are drawn from Figure 1, which presents selected factors that may intervene between education and job satisfaction. First, the relationship between education and quality of employment is examined, and the question is asked, "To what extent does quality of employment serve as a major factor linking education to job satisfaction?" The last general topic to be considered is the association between education and the importance that people assign to different aspects of their work. To what extent, it will be asked, are the motivational changes that the educational system effects in students congruent with the occupational rewards for which their educations qualify them. The report concludes with some suggestions for further research and a discussion of the role of education in preparing students for future careers.

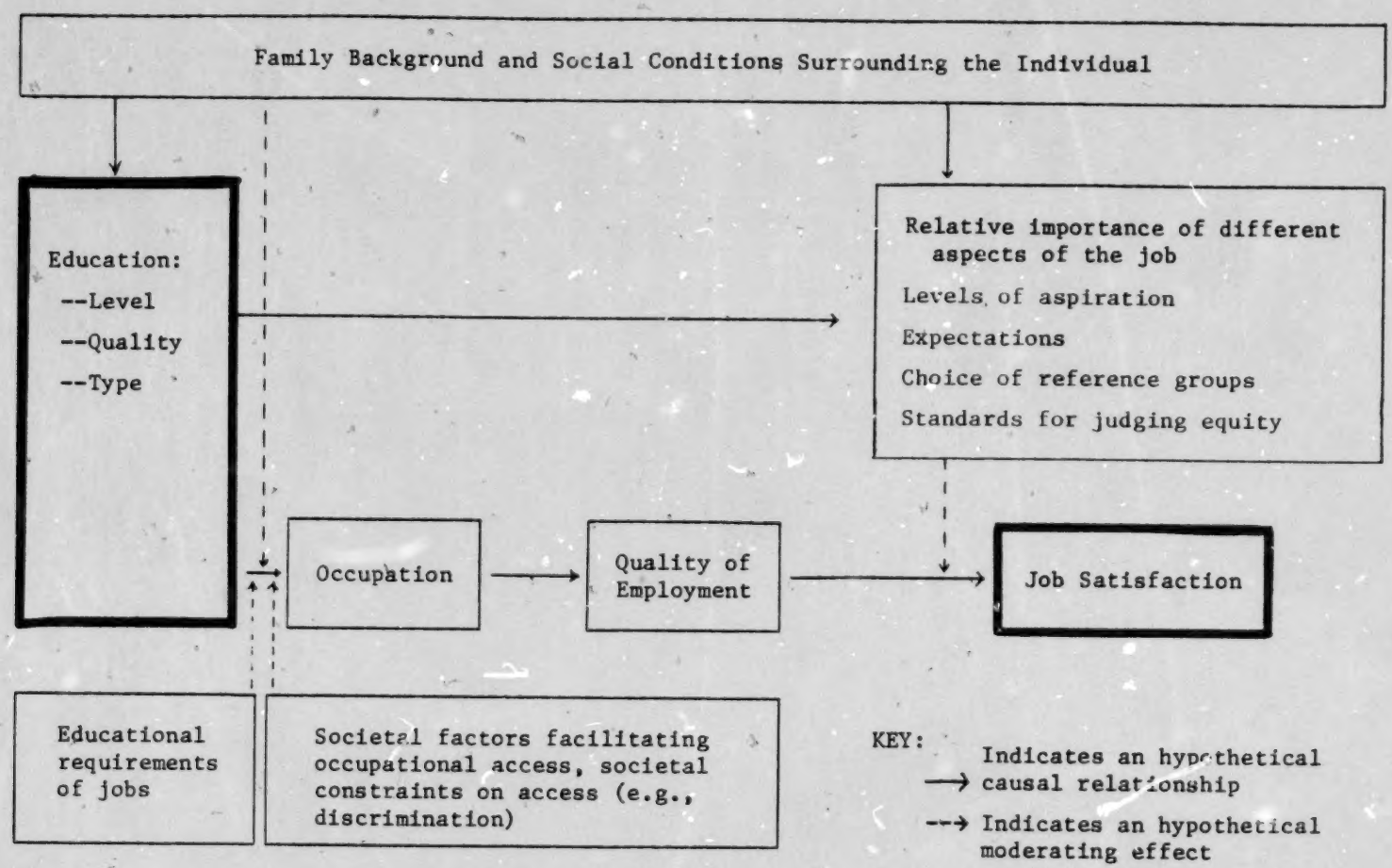

Figure 1

Selected Factors Intervening between Education and Job Satisfaction

EDUCATION AND JOB SATISFACTION--TESTING THE RELATIONSHIP

Previous research

Two sources were used to determine the relationship between education and job satisfaction: previously published research and secondary analyses of national survey data. A systematic review of previous investigations, the selection criteria for which are shown in Appendix A, yielded 100 studies that seemed by their titles to warrant detailed examination. This examination showed that: (a) most of them had selected their samples in such a way that there was little or no variation or range in education (e.g., all those people studied were college teachers); (b) the analysis did not use education as a variable, even though the title of the study's report suggested it; (c) education was used only to describe characteristics of the study's sample.

After this initial review, 27 studies were identified that met the selection criteria. The studies' characteristics and results are shown in Appendix C. Sixteen of the 27 studies included a more-or-less direct assessment of the relationship between education and job satisfaction. The rest of the studies dealt with the association between education and either other relevant attitudes toward work or behaviors (e.g., turnover) that had previously been shown to reflect job satisfaction. While more remotely relevant, they nevertheless permit some inferences that may help one to understand reactions to work that are related to education.

Of those 16 studies that dealt directly with the relationship between education and job satisfaction, five found a positive association between the two variables (Johnson and Johnson, 1972; Kessler, 1954; Klein and Maher, 1960; Wherry, 1954; Wood and Lebold, 1970). Three found a negative association between education and job satisfaction (Form and Geschwender, 1962; Larsen and Owens, 1965; Vollmer and Kinney, 1955). Eight showed either no association between education and job satisfaction or an equivocal association (Ash, 1954; Blood, 1969; Cooke, et al., undated; Kahn et al., 1964; Kornhauser and Sharp, 1932; Morse, 1953; Sinha and Sarma, 1962; Vaughn and Dunn, 1972).

The remaining eleven studies in Appendix C were concerned not with job satisfaction but with workers' attitudes and behaviors that either have been shown to be correlated with job satisfaction or are valued by employers. These include openedness to change, level of occupational aspirations, and tenure (or turnover). While the data are far from conclusive, the tendency in these studies was for more highly educated workers to be more open to change and to have higher levels of aspirations than others.

One hypothesis to be tested later in this report is that in samples that are occupationally homogeneous workers with higher levels of education are less satisfied than others. The assumption underlying this hypothesis is that those individuals with more education would tend to be overeducated for their jobs.

Although this hypothesis could not be tested with findings from the few previous studies that dealt directly with education and job

satisfaction, it is nevertheless interesting that the three studies reporting a negative relationship between these variables all employed occupationally homogeneous samples--manual workers, crew members on ships, and civilian ordinance employees. On the other hand, two of the five studies reporting a positive relationship used occupationally heterogeneous samples (Johnson and Johnson, 1972; Kessler, 1954).

There were no systematic differences among the studies that showed positive, negative, or no associations between education and job satisfaction in terms of: how they measured education (virtually all used education level rather than quality or type); how they measured job satisfaction; the types of organizations sampled; sampling procedures; statistical techniques used in the analysis of the association between education and job satisfaction. These and other study characteristics are shown in Appendix C. The small numbers of studies, as well as inadequate reporting, made difficult the task of comparison among studies, especially when trying to match studies that were similar in all aspects save one.

A final methodological criticism can be raised about some of the studies reviewed. Studies such as those of Larsen and Owens (1965), Blood (1969), and MacKinney and Wollens (1959), all of which used the general model of regression analysis, assume a linear relationship between education level and job satisfaction, an assumption that contradicts the findings based on the analyses of data reported below. These analyses show that the association between education level and most aspects of work or workers' attitudes tend to be nonlinear, and usually nonmonotonic as well. Previous studies that have used either correlation

or regression statistics that assume monotonicity and linearity may therefore have underestimated the relationship between education level and job satisfaction.

Education and job satisfaction in nine national surveys

Existing research concerning the relationship between education and job satisfaction has therefore been confined to very limited populations, usually workers in specific occupations and/or in specific employing establishments. The numbers and types of workers involved in such investigations is too small and their occupations too few to justify any generalizations about the association between education and job satisfaction among the American work force.

For this reason, secondary analyses were performed on the data obtained in nine national surveys of the American work force conducted between 1962 and 1973. The nine national surveys were variously conducted by the National Opinion Research Center, Ohio State University, and the Survey Research Centers of the Universities of California and Michigan. Although none of the studies had been explicitly designed to investigate the relationship between education level and job satisfaction, each contained measures of both variables. The quality of the job satisfaction measures employed varied considerably, from single-question measures (used in all the surveys prior to 1969) to multi-question measures with high reliabilities. Each survey employed a sample selected from a national population of either all employed people, all adults, or all persons within specific age ranges. In the latter two cases the

analysis sample was confined to employed persons. Therefore, while previously reported research had concentrated on samples that were frequently small and homogeneous, the studies providing data for secondary analyses were just the opposite--large samples of workers in diverse occupations.

Prior to these secondary analyses some government statistics on the educational composition of different occupational groups were reviewed in order to obtain some clue as to what these secondary analyses might reveal. These statistics are summarized in Table 1. If occupation is used as a surrogate measure of quality of employment (and it is a poor one indeed), which in turn may influence job satisfaction, the statistics are discouraging. By-and-large there is not great variation among occupational categories in terms of the median years of schooling achieved. Managerial, sales, clerical, blue-collar, and non-private-household service workers constitute about three-quarters of the work force. Median years of schooling within these major occupational groups varies only between eleven and thirteen years, with the exception of black men who are managers and transport operatives. Three occupations frequently regarded as "poorer" ones--private household, farm, and laboring occupations--do indeed have people with less education than those in other occupations, but the percentage of workers in these occupations is comparatively small; likewise, the modest-sized professional and technical occupations, presumably "better" ones, have workers with conspicuously high levels of education.

These considerations planted the suspicion that, once the association between education level and job satisfaction had been examined

Table 1

Median Years of School Completed by Major Occupational Group, Sex, and Race (March, 1973)

Major occupational group	Percentage of all employed people who are in the occupational group	Median years of school completed			
		White men	White women	Black men	Black women
Professional and managerial	24.2%	15.4	15.8	16.2	16.3
Professional and technical	14.0	16.7	16.5	16.6	--[b]
Managerial	10.2	13.0	12.7	13.8	--[b]
Farmers and farm laborers	3.6	10.9	11.6	7.2	--[b]
Farmers and farm managers	2.0	11.9	--[b]	--[b]	--[b]
Farm laborers and supervisors	1.6	9.9	--[b]	--[b]	--[b]
Sales and clerical	23.6	12.8	12.6	12.6	12.6
Sales	6.4	13.0	12.4	--[b]	--[b]
Clerical	17.2	12.7	12.6	--[b]	--[b]
Blue-collar	30.3	12.1	11.6	11.0	11.7
Craft workers	13.4	12.2	--[b]	12.0	--[b]
Operatives	16.9	12.0	--[b]	11.2	--[b]
Non-transport operatives	13.0	12.0	--[b]	11.6	--[b]
Transport operatives	3.9	12.0	--[b]	10.7	--[b]
Non-farm laborers	5.1	11.8	--[b]	9.9	--[b]
Service	13.2	12.1	12.1	11.1	10.9
Private household	1.6	--[b]	10.7	--[b]	9.3
Not in private households	11.6	--[b]	12.2	--[b]	11.9

SOURCE. 1974 Manpower Report of the President

[a]Major occupational groups are represented by the flush-left row captions. Subsidiary groups are represented by two levels of indented row captions.

[b]The number of individuals in this category was too small to provide statistics that the U.S. Department of Labor regarded as reliable enough to present.

directly in the national samples the association would be found to be palpable, positive, but hardly overwhelming. Twelve tests of this relationship are shown in Table 2.

The rows of the table correspond to the nine surveys reviewed and indicate for each survey the date, source, age, and sex composition of the sample, and the type of job satisfaction measure employed. There were two such types of measures. Facet-free satisfaction is based on very general questions that in no way refer to specific aspects of one's job (e.g., "All in all, how satisfied are you with your job?"). Facet-specific satisfaction is based on questions that do refer to specific aspects of jobs (e.g., "How satisfied are you with the hours you work?"). Each has its peculiar strengths and weaknesses. Facet-specific measures are always vulnerable to the "mix" of aspects covered. One measure might, for example, be heavily loaded with questions on interpersonal relations; another might emphasize the content of one's jobs. If a working condition affects satisfaction with some aspects more than others, the relationship between overall satisfaction and the working condition will be contingent upon how heavily these aspects are weighted in the satisfaction measure.

On the other hand, facet-free measures are vulnerable to criticism because they are usually based on very few questions (sometimes only one), and their internal consistency reliabilities suffer accordingly. Increasing the number of questions they contain is not easy. There are, after all, just so many ways one can rephrase the question, "All in all, how satisfied are you with your job?" without obliquely

Table 2

Mean Overall Job Satisfaction (z-scores) in Relation to Level of Education in Nine National Surveys

Year	Source	Type of Measure of Overall Job Satisfaction	Sex of Workers	Age of Workers	Level of education					F-Ratio	eta [b]
					Grade School or Less	Some High School	Completed High School	Some College [a]	Completed College		
1962	National Opinion Research Center	Facet-free [c]	Both	18 or older	-.06 (N=247)	.06 (N=220)	-.08 (N=316)	.05 (N=123)	.25 (N=114)	2.86*	.10
1964	University of California	Facet-free [c]	Both	18 or older	.09 (N=194)	-.12 (N=204)	.00 (N=327)	-.08 (N=126)	.17 (N=138)	2.31	.10
1964	National Opinion Research Center	Facet-free [c]	Men	16 or older	.11 (N=721)	-.05 (N=629)	-.05 (N=928)	-.08 (N=409)	.11 (N=409)	4.66***	.08
1966	Ohio State University	Facet-free [c,d]	Men	14-24	-.18 (N=308)	.06 (N=460)	.00 (N=781)	.02 (N=162)	.31 (N=89)	5.06***	.10
1966	Ohio State University	Facet-free [c]	Men	45-59	-.05 (N=1856)	-.12 (N=893)	.03 (N=1047)	.19 (N=352)	.28 (N=387)	15.34***	.11
1968	Ohio State University	Facet-free [c,d]	Women	14-24	-.23 (N=67)	-.17 (N=184)	.02 (N=776)	.03 (N=196)	.21 (N=126)	3.77**	.09
1969	University of Michigan	Facet-free	Both	18 or older	.02 (N=238)	-.13 (N=269)	-.03 (N=551)	-.06 (N=253)	.28 (N=213)	5.80***	.11
		Facet-specific			.01 (N=230)	-.01 (N=265)	.00 (N=549)	-.01 (N=252)	.04 (N=211)	0.12	.00

Table 2

Mean Overall Job Satisfaction (z-scores) in Relation to Level of Education in Nine National Surveys (continued)

Year	Source	Type of Measure of Overall Job Satisfaction	Sex of Workers	Age of Workers	Level of education					F-Ratio	eta[b]
					Grade School or Less	Some High School	Completed High School	Some College[a]	Completed College		
1971	University of Michigan	Facet-free[c]	Both	16 or older	.05 (N=168)	.07 (N=208)	.00 (N=413)	-.14 (N=201)	.01 (N=170)	1.38	.04
		Facet-Specific			-.01 (N=168)	.00 (N=208)	.01 (N=415)	-.16 (N=208)	.17 (N=170)	2.63*	.08
1973	University of Michigan	Facet-free	Both	18 or older	.01 (N=175)	-.08 (N=211)	-.09 (N=562)	-.01 (N=306)	.28 (N=236)	6.07***	.12
		Facet-Specific			.00 (N=164)	.00 (N=203)	-.05 (N=553)	-.07 (N=293)	.21 (N=234)	3.41**	.08

[a] In this table, and in all subsequent tables and figures, this category includes graduates of two-year college programs as well as those who did not complete longer programs.

[b] The values of eta have been adjusted for possible shrinkage due to small numbers of cases in categories.

[c] This measure was based on a single question.

[d] Workers still attending secondary schools were excluded from all analyses of data from this survey.

* $p < .05$

** $p < .01$

*** $p < .001$

introducing references to specific facets of the job.

Five levels of education common to all the surveys analyzed are represented by five columns in Table 2. For each, the mean overall job satisfaction score is shown in the body of the table. To permit an easy comparison among measures, all these means have been converted to standard (z) scores with means of zero. A greater numerical value always indicates greater satisfaction. Statistical tests of the relationship between education level and job satisfaction were obtained by one-way analyses of variance* and their attendant F-ratios. The five levels of eudcation were used as the categorical independent variable, and job satisfaction was the continuous dependent variable. One by-product of each analysis of variance was an eta coefficient, a nondirectional measure of association that does not require associations to be linear. Where an association is linear, eta is equivalent to a Pearson r.

Figure 2 presents three hypothetical relationships between education level and job satisfaction that might reasonably be expected to occur in the national survey data. The most primitive of these is no relationship at all. The possible positive relationships are of two types. In the first, each year of education completed is rewarded by a fixed increment in job satisfaction. In the second, increments occur only at those points where educational credentials are commonly conferred,

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*One-way analyses of variance do not permit computations based upon weighted sample statistics. Several of the surveys in Table 2 employed sampling procedures that would require sampling weights in order for the sample statistics to provide unbiased estimates of the population parameters. The tables and figures in this report are confined to unweighted data in all surveys in order to facilitate the computation of levels of statistical significance.

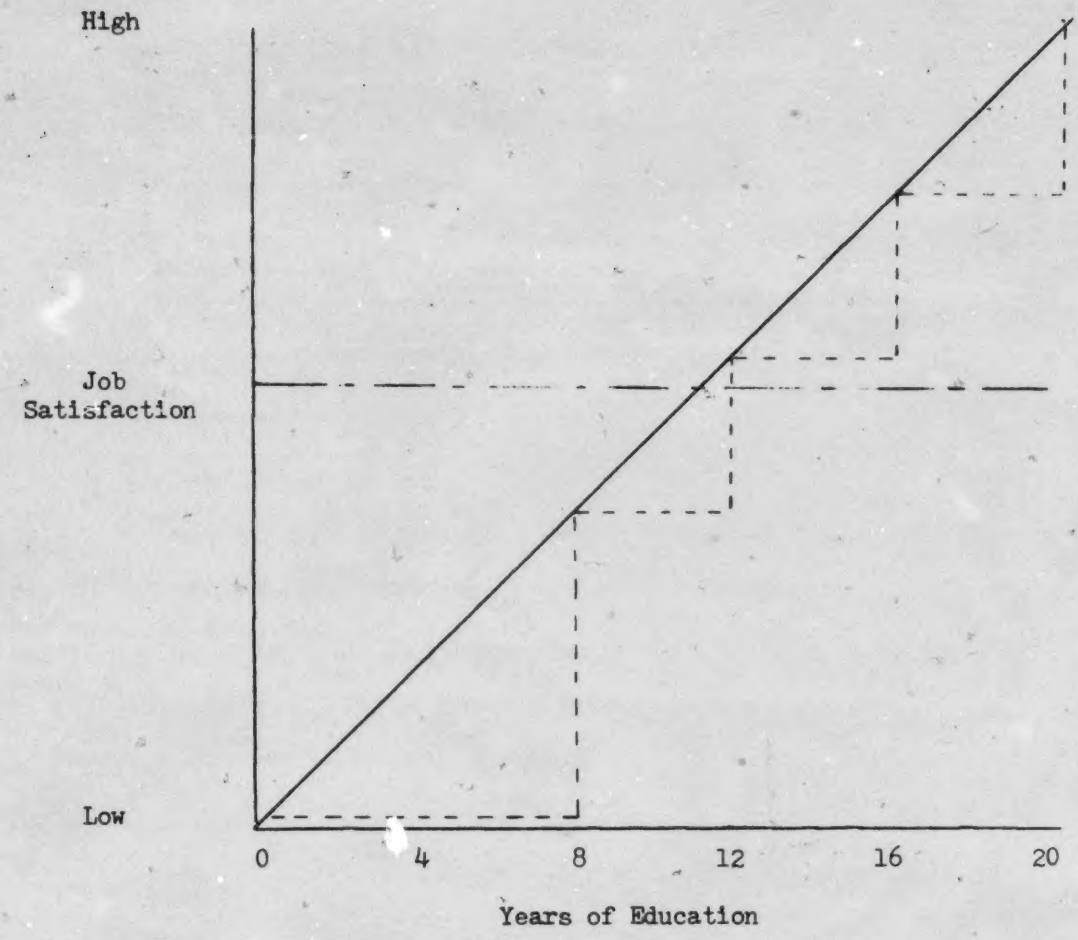

Figure 2

Three Possible Relationships between Years of Education and Job Satisfaction

i.e., at completion of grade school (8 years), high school (12 years), college (16 years), and graduate school (20 years). Under this "credentialized" type of relationship, there are no increments in job satisfaction between those years of education where diplomas or degrees are not usually obtained.

All the relationships shown in Table 2 between education level and job satisfaction were modest at best. Eta coefficients ranged from zero to .12, and in three instances the observed relationships were not statistically significant. The most consistent--albeit not universal--pattern in Table 2 was little or no relationship between education level and job satisfaction up to the "some college" level, beyond which there was a fairly sharp increase in satisfaction. The data clearly did not conform to the yearly, incremental prototype already shown in Figure 2. Instead, they were a hybrid of "no relationship" (at lower levels of education) and a credentials effect occurring at the college level. All save one of the surveys analyzed indicated that, in terms of job satisfaction, there was no payoff from having college training unless one also received a college degree.

The relationships in Table 2 were further examined with the effects of age removed statistically. These analyses did not appreciably affect the magnitude of the original relationships. The major impact of the analyses was to reduce somewhat the job satisfaction scores of those people who had only grade school educations, bringing their scores more closely into line with the three surveys in Table 2 that were based on age-restricted samples (the Ohio State University ones).

Figure 1 (page 11) has already suggested that the occupational payoffs of increasing education are subjected to constraints, notably occupational discrimination. Since blacks were oversampled in the three Ohio State University surveys, enough blacks were available to estimate the association between education and job satisfaction in populations that were homogeneous in terms of race, sex, and age. As Table 2 has already shown, when workers were not differentiated according to race, education was significantly (although not strongly) associated with job satisfaction in all three Ohio State University surveys. But with race controlled, education level remained significantly related to job satisfaction only among white workers, particularly so among older white men. For black workers there was no statistically significant payoff, in terms of job satisfaction, from increasing education.

Quality of education and job satisfaction

The two Ohio State University surveys based upon samples of people 14-24 years old obtained information concerning the quality of the secondary school that each person had attended. This measure of quality of education had four components: size of enrollment in the seventh through twelfth grades; availability of library facilities per pupil; full-time equivalent counselors per 100 pupils; pupils per full time teacher. Although level of education had been found not to be related strongly to overall job satisfaction, there remained the possibility that quality of education and job satisfaction might be related. To test this, the Ohio State University samples were first limited to those who were no longer enrolled in school and then divided into those

who had and had not ever gone to college. In none of the subsamples thus defined by sex and college attendance was the quality of one's secondary school education related to job satisfaction.*

Job satisfaction and relative levels of education

Thus far the secondary analyses that have dealt with level of education have treated level in absolute terms. But the notion of congruence invoked earlier in this report suggests that a more effective use of education level could be made by casting it in terms that are relative to the demands of jobs. The notion of congruence predicts that workers would be satisfied to the extent that their educational attainments matched the educational requirements of their work.

Therefore, four measures of education were developed that expressed a worker's years of education in terms of deviation from each of the following standards:

1. Amount of education (in years) required by the worker's job as estimated by the General Educational Development codes of the Dictionary of Occupational Titles (1965).**

2. The worker's own estimate of how many years of formal education were needed by a person in his or her job.

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*Although in one instance (among women who had never gone to college) the relationship was statistically significant, its form was erratic.

**The yearly equivalents of the General Educational Development codes used were: 1 = 4 years; 2 = 8 years; 3 = 10 years; 4 = 12 years; 5 = 16 years; 6 = 18 years.

3. The median years of education attained by others in the worker's occupation, as indicated in the 1970 Census.

4. The median years of education attained by others in a person's work group.*

Mean overall job satisfaction is shown in Table 3 in relation to each of these measures of educational deviation. For the most part education expressed in relative terms was a better predictor of job satisfaction than was absolute level of education. The only measure of relative education that was not significantly related to job satisfaction was that calibrated with respect to the median number of years of education of those in the worker's occupation.

Strikingly, it was not deviation per se that was associated with dissatisfaction, but only deviation in a particular direction--where a worker was too highly educated for his or her work. The under-educated workers were particularly well satisfied, perhaps because of their evident successes in having attained occupations better than they might have anticipated on the basis of their educational attainments alone.

It may therefore be concluded that the relatively small payoffs in job satisfaction that accompany increasing education can be more than offset when job demands fail to keep pace with educational attainment.

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*Analyses employing this measure were based upon data from yet another study, the Survey of Organizations, which has been used principally to obtain data from workers at all levels in large industrial establishments. Over the last several years many such companies have used the survey instrument, and their data have been pooled to form a master file of about 25,000 workers. The present analysis was confined to people in work groups of from three to 15 people.

All other measures of educational deviation were based upon data from the 1973 University of Michigan survey.

Table 3

Mean Overall Job Satisfaction (Facet-free), by Relative Levels of Education

Measure of level of education	Mean overall job satisfaction (z-scores)	Measures of association and significance tests
Worker's level relative to that which worker reports is needed for his or her job		
Worker has four or more years of education short of that needed (N = 107)	.22	
Worker has two years of education short of that needed (N = 182)	.17	
Worker has the level of education needed (N = 788)	.07	eta = .21
Worker has two years of education in excess of that needed (N = 227)	-.07	F = 17.57 d.f. = 4; 1475 p < .001
Worker has four or more years of education in excess of that needed (N = 176)	-.54	
Worker's level relative to that which Dictionary of Occupational Titles indicates is needed for his or her job[a]		
Worker has four or more years education short of that needed (N = 174)	.00	
Worker has two years education short of that needed (N = 121)	.15	
Worker has the level of education needed (N = 457)	.11	eta = .14
Worker has two years education in excess of that needed (N = 285)	-.12	F = 6.39 d.f. = 4; 1142
Worker has four or more years education in excess of that needed (N=110)	-.34	p < .001

[a]Based on the General Educational Development codes of the Dictionary of Occupational Titles.

Table 3

Mean Overall Job Satisfaction (Facet-free), by Relative Levels of Education (continued)

Measure of level of education	Mean overall job satisfaction (z-scores)	Measures of association and significance tests
Worker's level relative to the median level of others in his occupation[b]		
Worker has three or more years education less than others (N = 163)	.08	
Worker has two years education less than others (N = 116)	-.07	eta = .00 F = 0.72 d.f. = 4; 1482 n.s.
Workers education differs from others by less than two years (N = 1021)	.00	
Worker has two years education more than others (N = 70)	-.13	
Worker has three or more years education more than others (N = 117)	.02	
Worker's level relative to the mean level of others in his immediate work group[c]		
Considerably less than that of others (N = 3139)	.24	
Somewhat less than that of others (N = 3583)	.03	eta = .14 F = 84.64 d.f. = 4; 15670 p < .001
The same as that of others (N = 1651)	-.01	
Somewhat more than that of others (N = 1601)	-.07	
Considerably more than that of others (N = 458)	-.17	

[b]Based on three-digit 1970 Census occupation codes.

[c]The educational deviation score of each worker was normalized with reference to the deviations of others in his or her work group. The deviation scores do not therefore translate conveniently into years.

SOURCE: 1972-73 Quality of Employment Survey

The problem seems particularly acute in a society where the average education level of the population is increasing. Unless job demands likewise increase, a progressively more dissatisfied work force is a likely consequence.

The data in Table 3 have methodological as well as prophetical implications. They suggest that in any particular study the direction of the relationship between education level and job satisfaction will depend on the occupational diversity of the sample. In occupationally diverse samples, the relationship will be positive; but as samples become progressively more homogeneous in terms of job characteristics the relationship will reverse, and the most highly educated workers will also be the most dissatisfied.

Satisfaction with specific aspects of the job

So far, the discussion has dealt exclusively with overall job satisfaction. Data from the 1973 national survey provided a further opportunity to differentiate workers' reports of satisfaction in terms of more specific aspects of their jobs. Four such job facets were distinguishable (Quinn and Shepard, 1974):

1. Comfort indicates one's desire for solid creature comfort at work. There is no indication that a worker who regards Comfort as important wants his or her job to be exciting, interesting, or challenging--only serene and easy--in short, a "soft" job.

2. Challenge reflects a worker's desire to be stimulated and challenged by his or her job and to be able to exercise his or her acquired skills at work.

3. Financial Rewards encompasses pay, fringe benefits and job security.

4. Resource Adequacy represents workers' wishes for adequate resources with which to do their jobs well--help, equipment, information, and supervision.

Figure 3 shows the relationship between the five levels of education and satisfaction with each of these four facets. Education was found to be significantly related to satisfaction with only two facets--challenge and financial rewards. Indeed, the relationship between education and challenge was greater (eta = .19) than that between education and overall satisfaction (eta = .12). Satisfaction with financial rewards showed a marked credentials effect. With regard to satisfaction with challenge, the credentials effect was confined to college levels.

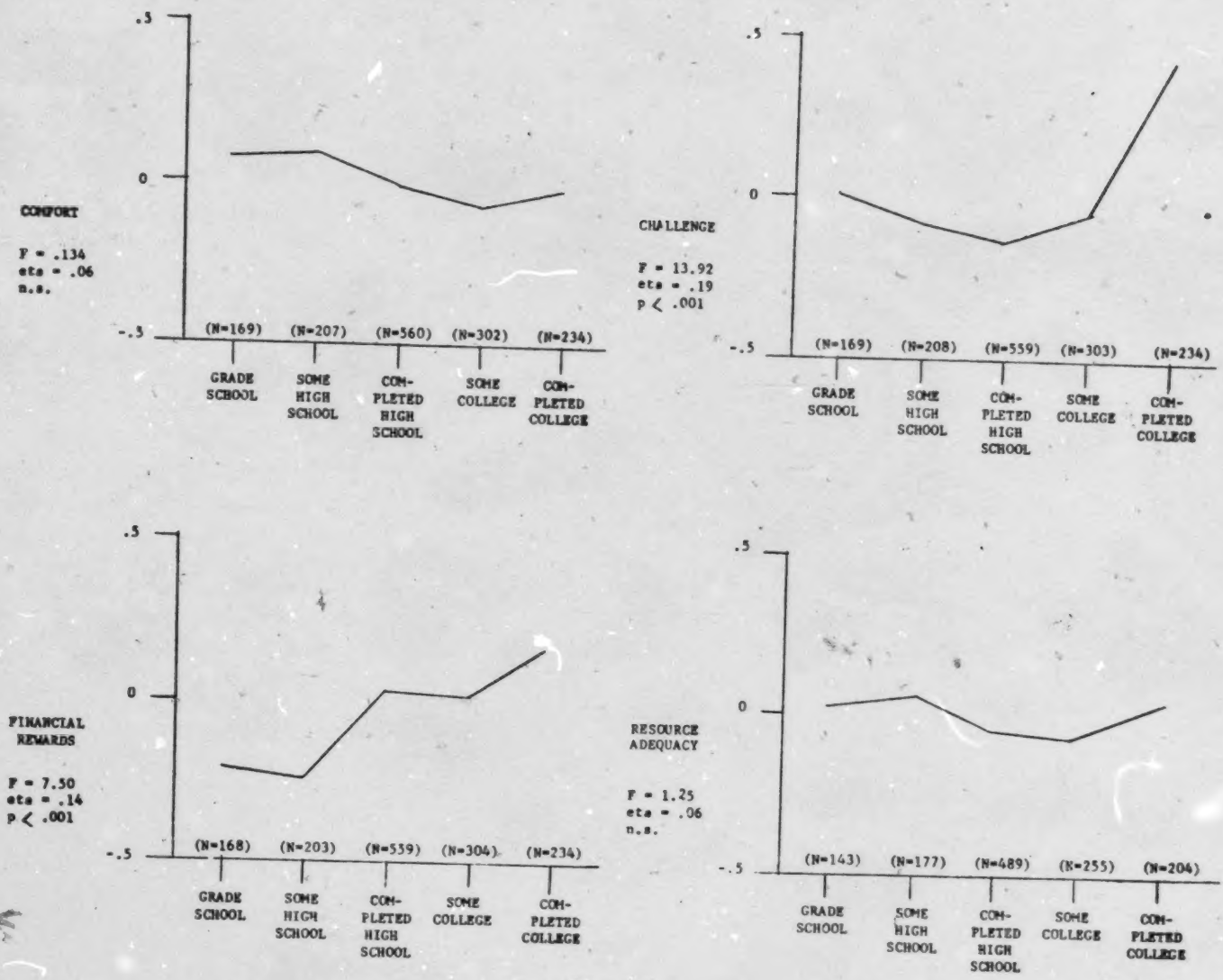

Figure 3

Satisfaction with Job Aspects, by Education Level

SOURCE: 1972-73 Quality of Employment Survey

Note--In this and in later figures using the same format the following conventions were adopted: 1) Education level is presented along the abscissa and the dependent variable along the ordinate; 2) To facilitate comparison among dependent variables, each is presented as a z-score, that is, standardized with reference to its own mean and standard deviation.

EDUCATION AND QUALITY OF EMPLOYMENT

Education is quite far removed from job satisfaction in the causal model already shown in Figure 1 (page 11). The remainder of this report traces some of the individual links in the model with the intention of understanding two phenomena identified in the preceding pages: the lack of any sizeable relationship between education level and job satisfaction; and the tendency for those with only some college education to be no more satisfied than high school graduates and quite a bit less satisfied than those with college degrees. The analyses relevant to these two phenomena were based exclusively on the 1973 University of Michigan survey and the three Ohio State University surveys.

Quality of employment refers to those conditions of work that can be regarded as occupational rewards and that are likely to have some impact on worker's health, attitudes, or behaviors. Pay is the obvious one, but there are many other nonpecuniary benefits as well. Four general aspects of jobs were identified earlier: Comfort, Challenge, Financial Rewards, and Resource Adequacy. The 1973 University of Michigan survey had for each of these dimensions a measure of how much importance the worker attached to it and how satisfied he or she was with it (Figure 3). For each aspect there was also an available measure of quality of employment, the components of which are shown in Appendix D. While satisfaction measures are intended to elicit workers' affective reactions to or evaluations of a job aspect, quality of employment

measures are more strictly descriptive. The clearest example involves pay. "How good is your pay?" represents satisfaction with pay: "What is your annual income from your primary job?" represents quality of employment with regard to pay. In some instances, especially with regard to Resource Adequacy, the operational distinction was not always so clean.

Since they rely exclusively on self-reports, quality of employment measures in the 1973 national survey available would ideally be complemented by more "objective" measures of quality of employment. A measure of occupational status or prestige was initially considered for use as a surrogate for quality of employment. This would be acceptable for any analysis except this one, because education level is generally used to determine the status of an occupation in the first place. The most widely used occupational status measure, for example, is that of Duncan. While the measure has its origins in Americans' prestige ratings of several dozen occupations, the measure in its final form determines the status of a job by a weighted combination of the educations and incomes of those in the job. Relating education to status under these conditions would simply be relating something to itself. We are therefore left for the time being with a quality of employment measure based on self-reports.*

Regarding quality of employment as embodying immediate rewards obtained from work, the model suggests that to the extent that education

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*In another study (Cammann, Quinn, Beehr and Gupta, 1975) the measure of overall quality of employment correlated .47 with an independent quality of employment measure based upon on-the-job observations and employers' records.

is rewarded occupationally, education level should be positively related to overall quality of employment. Moreover, this relationship should be stronger than that between education level and job satisfaction. According to Figure 4, both inferences are correct. Quality of employment was significantly and positively related to education level. The eta coefficient of association between education level and quality of employment was .23; none of the etas of association between education level and job satisfaction presented in Table 2 was greater than .12.

But simply noting that the relationship in Figure 4 is "positive" conceals the fascinating nonlinearity of the relationship. Every increment in years of education was not accompanied by an equally great increment in quality of employment. Instead, the latter increments only occurred at those points where educational credentials are conferred. Little is gained in quality of employment by going from grade school to obtaining some high school education but no diploma, or by going from high school to obtaining some college education but no degree. The payoff comes only when the diploma or degree is obtained.

Figure 5 shows some of these payoffs more specifically, since the overall quality of employment measure was composed of four distinct aspects of jobs: Comfort; Challenge; Financial Rewards; and Resource Adequacy. According to Figure 5, most of the association between education level and overall quality of employment (Figure 4) was due to the increases of challenging work and financial rewards associated with increasing education. Education level was not related to quality of employment with regard to either Comfort or Resource Adequacy. The strong credentials effect apparent in the analysis using the overall

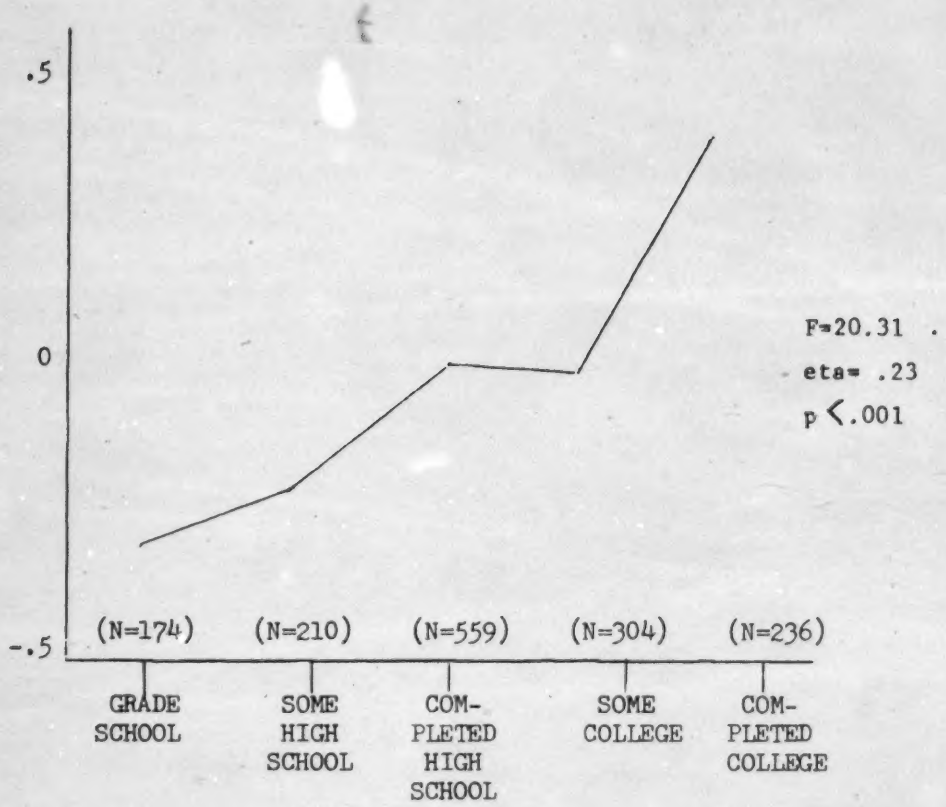


Figure 4

Overall Quality of Employment, by Education Level

SOURCE: 1972-73 Quality of Employment Survey

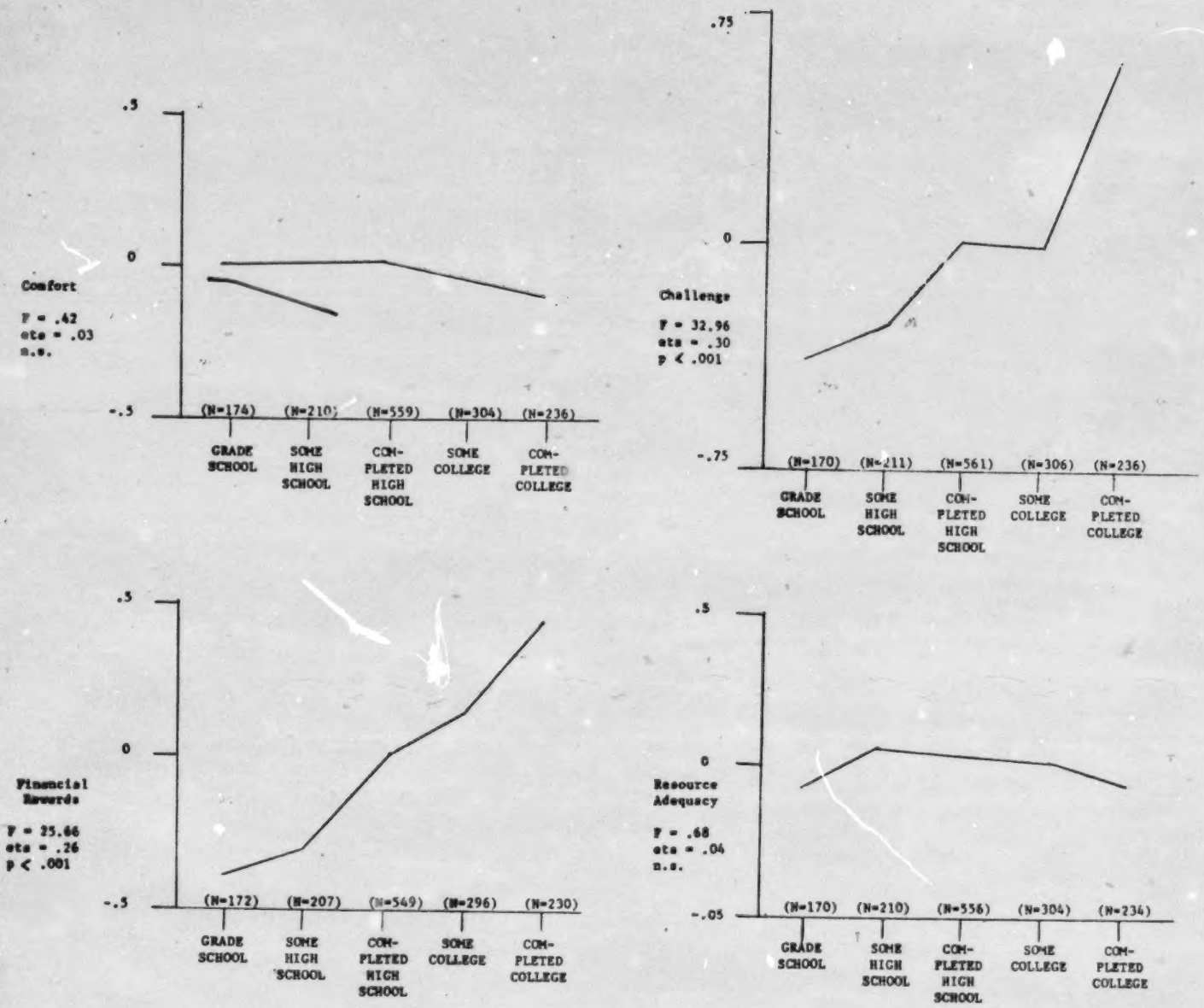


Figure 5

Quality of Employment with Regard to Job Aspects,

by Education Level

SOURCE: 1972-73 Quality of Employment Survey

quality of employment measure shows up in Figure 5 most conspicuously with regard to Challenge, and somewhat less so with regard to Financial Rewards.

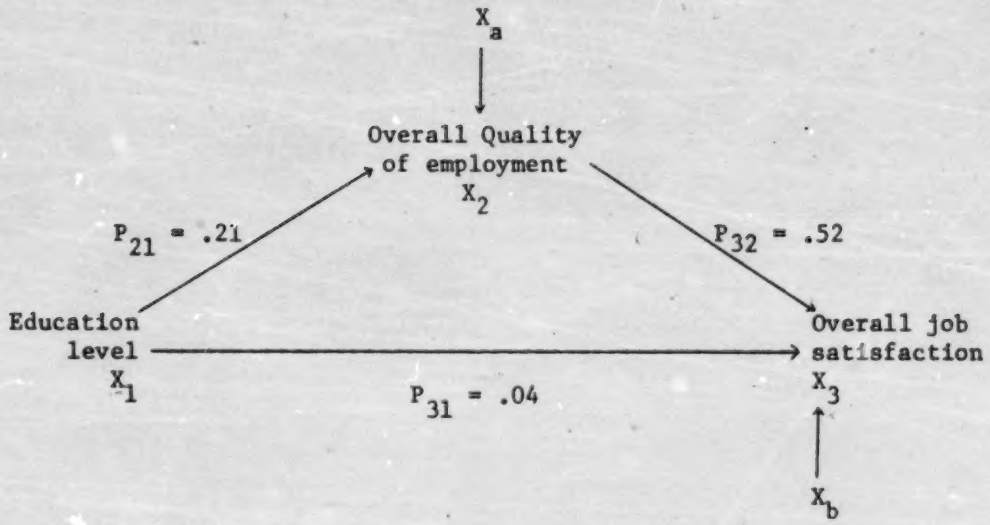
Figure 5 begins to shed some light on the unexpected dissatisfaction of the people with some college education but no degree. If one's experience in college either raises one's occupational standards or alters the mix of personal values that one wishes to realize through later work, one component of this alteration may be an increased concern with work that is interesting, self-developing, and self-fulfilling--that is, challenging. But, according to Figure 5 workers with only some college were no more likely to secure this kind of work than were those who had only completed high school.

That quality of employment with regard to Comfort was not associated with education level was probably due to the particular job facets included in the Comfort measure. A "good" job with regard to Comfort is essentially a problem-free one where the problems involved encompass such diverse matters as transportation to work, health and safety hazards, the physical environment, hours, and work load. With respect to these problems, increased education appears to offer a mixed set of assets and liabilities. Problems with the physical environment at work were fewer among those who were better educated, but this decrease was offset by increased difficulties with working hours and excessive work-loads. The net result appears to have been no overall association between education level and Comfort. Better educated workers seemed to have exchanged one set of Confort-related problems for another.

Education level was, therefore, substantially related to overall quality of employment (eta = .23), which in turn was related to overall job satisfaction (eta = .46). The direct relationship between education level and job satisfaction in the 1973 Michigan survey was substantially smaller, with an eta of .12 for the facet-free measure.

It was suggested earlier that the major mechanism by which education level affects job satisfaction is by helping workers to secure better jobs. To test this suggestion a path analysis was performed. Path analysis allows for the application to data of a model of direct and indirect relationships among several variables. It assumes that the independent variables fall in causal order before the dependent ones. In this case education level and quality of employment were assumed to be antecedents of the dependent variable, facet-free job satisfaction. It was further assumed that: (1) both education level and quality of employment influence an individual's job satisfaction, and that these are one-way influences, with no feedback; (2) education level influences quality of employment, also a one-way influence; and (3) residual variables are uncorrelated.

The relevant measures of association used as input to the path analysis are shown schematically as follows:



The numbers of the paths designated by the arrows reflect the amount of direct contribution of a given variable to another variable. Path coefficients, symbolized by p, are identical to beta coefficients in the standardized multiple regression equation.* X_a and X_b are residual variables.

As can be seen in the above diagram, the direct effect of quality of employment on job satisfaction was sizeable, but there was little direct influence of education on job satisfaction. When P_{21} was multiplied by P_{32}, the resulting product, .11, showed a weak effect of education on job satisfaction by way of the former's influence on quality of employment. In other words, any effect that education level had on overall job satisfaction was explainable in terms of education helping its

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*Since this is the case, it is assumed that the relationships are linear, which earlier data in this report have indicated was not necessarily true. Hence the estimates of the relationships reported in this and later path analyses will, when the true relationships were not linear, be smaller than those estimated by the eta coefficients.

recipients to secure better jobs. Education had no direct effect upon how favorably workers felt about their jobs. Nor did the model of job satisfaction presented earlier in this report imply that there should be any such direct effect.

Although they contained no single measure of overall quality of employment, the three Ohio State University surveys contained data on hourly wage, which is certainly an important facet of quality of employment. Two other measures contained in the surveys could also be regarded, albeit only very indirectly, as reflecting quality of employment: occupation (classified into six major occupational groups); and the amount of occupational mobility of the worker away from the occupation held by his or her parent of the same sex when the former was 14 years old. In order to assess the relative contributions to job satisfaction of education independent of the aforementioned three indicators of job quality, the four variables were used in a multiple classification analysis to predict overall job satisfaction. Multiple classification analysis accomplishes the same thing as conventional multiple regression analysis but requires neither continuously scaled independent variables nor linear relationships between independent and dependent variables. Like multiple regression, it produces for each relationship between an independent and a dependent variable a beta coefficient indicating the magnitude of that relationship with the effects of all other independent variables removed. Table 4 contains sets of beta coefficients for four Ohio State University samples--men, 14-24 years old; women, 14-24 years old; these two samples combined; and men, 45-59 years old. In each analysis reported in Table 4, overall job satisfaction (facet-free) was

the dependent variable and the four independent variables were level of education, occupation, occupational mobility, and hourly wage.

Were education to have no effect upon job satisfaction other than through its contribution to an individual's securing good quality of employment, then the betas associated with education in Table 4 could be expected to be zero. They were, in fact, somewhat higher than that, suggesting that education had some effect, albeit small, on job satisfaction above and beyond its contribution to quality of employment. This is consistent with neither the model of job satisfaction presented earlier nor with the results of the path analysis of data from the 1973 Michigan survey. The data in Table 4 must be tempered, however, by the realization that the three quality of employment indicators in the table are a very limited selection. As a set, combined with education, their contribution to satisfaction was small, yielding a multiple correlation of, at most, .21 (as opposed to the eta of .46 obtained with a more inclusive set of indicators in the 1973 Michigan survey). This is not surprising, since wages have been generally found not to be a very effective predictor of job satisfaction. Likewise, Barnowe, Mangione, and Quinn (1972) report that occupational characteristics are far poorer predictors of job satisfaction than are more direct measures of quality of employment. Occupational mobility between generations has likewise been found to be but a minor contributor to overall job satisfaction. Table 4 indicates, moreover, that such mobility was an effective predictor only among the young, who were more likely than older people to take their parent's occupation as a frame of reference for evaluating their own jobs. According to Table 4, this frame of reference played no part

Table 4

Beta Coefficients Predicting Overall Job Satisfaction from Level of Education and Selected Indicators of Quality of Employment

Predictor[a]	Women, ages 14-24 (N=574)	Men, ages 14-24 (N=992)	Women and Men, ages 14-24 (N=1566)	Men, ages 45-59 (N=3216)
Level of education	.06	.10	.06	.08
Major occupational classification	.16	.17	.16	.18
Occupational mobility	.10	.07	.07	.00
Hourly wage	.20	.08	.08	.10
Multiple correlation (R)	.21	.16	.18	.19

SOURCE: Ohio State University National Longitudinal Surveys

[a] The predictors employed the following numbers of classifications: level of education = 5; major occupational classification = 6; occupational mobility = 5; hourly wage = 7.

in determining the job satisfaction of older workers. Therefore, the matter of whether education affects job satisfaction by virtue of its affecting quality of employment could not be answered by the Ohio State University surveys because the surveys' quality of employment indicators were too few.

EDUCATION AND VALUES

Earlier in this report it was suggested that education has two work-related functions. The first is its equipping a person to secure good quality of employment. Two mechanisms by which this may occur were also suggested: education may impart those skills demanded by the labor market; education may confer diplomas and degrees that qualify an individual to meet minimum educational standards set by employers. That education seems to be serving this function was suggested by the data in the preceding section which showed that there was an association between level of education and quality of employment--especially quality of employment with regard to Challenge and Financial Rewards. Which of the two mechanisms was at work to produce this association was not tested directly, but can nevertheless be inferred from the data. Were the effect of education simply to impart qualifying skills, the association between education level and quality of employment would be expected to correspond to the yearly, incremental pattern shown in Figure 2. In none of the cases where education level was related to quality of employment was this the case. Instead, the relationships tended to be stepwise ones, indicating a credentials effect, especially at the college levels. This suggests that employers allocate good jobs on the basis not only of an individual's total amount of schooling, but on the basis as well of the diplomas or degrees that he or she possesses. The diploma or degree if required as proof that the individual has succeeded at a

particular academic stage (e.g., college), and educational "drop outs" at any level are not occupationally rewarded in terms commensurate with the total amount of schooling they have attained.

The second job-relevant function attributed earlier to education was the alteration of the needs, values, and expectations in matters concerning work. Berg (1970) has summarized some information indicating that higher levels of education are associated with higher occupational aspirations. It is not clear, however, whether education actually effects these changes or whether both educational attainment and occupational aspirations are the effects of a common set of personal and environmental conditions. Super, for example, concludes that those who are well-endowed personally and environmentally, who take the more demanding school programs, who earn good grades, and who make good use of extra-curricular activities also tend to handle their post-high school careers better and to be more successful and satisfied in their job than others.

Unfortunately, most of the studies that have examined the relationship between level of education and occupational aspirations have tended to measure aspirations in terms of the prestige (and, less often, wages) of the job to which one aspires. Although many other desirable aspects of jobs are associated with occupational prestige, prestige by itself is just one of many aspects of jobs with regard to which aspiration can be reckoned. When a national sample of workers were asked to describe the characteristics of an ideal job, only two percent mentioned the prestige of the job (Kilpatrick, Cummings & Jennings, Jr., 1964). In 1957, Herzberg, et al., summarized nine previous studies wherein

workers were asked to indicate what was important to them in a job. The eleven characteristics most frequently mentioned did not include occupational prestige. Nor did Herzberg, et al. find occupational prestige to be a major contributor to job satisfaction. In a 1969 national survey of the work force, overall job satisfaction correlated only .13 with occupational prestige (Quinn, et al., 1971).

While none of the national surveys analyzed permitted the assessment of level of aspiration with regard to matters any broader than prestige or wages, the 1973 survey contained data concerning the importance that workers attached to four general aspects of their jobs--the aspects of Comfort, Challenge, Financial Rewards, and Resource Adequacy referred to earlier in this report. The associations between educational level and the importance assigned to these job facets are shown in Figure 6 (expressed in z-scores, with a high numerical value indicating great importance). The figure indicates that level of education was clearly associated with the importance that workers attach to each of these job aspects. As education increased, the importance of Challenge increased, and there was a decline in the importance of Comfort, Financial Rewards, and Resource Adequacy. In other words, education was associated with an increase in "higher order" (Lawler & Suttle, 1972) needs (i.e., Challenge) and a decrease in "lower order" ones (i.e., Comfort and Financial Rewards).*

Complicating these relationships is the possibility that importance ratings of job facets may be correlated with quality of employment

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*As an instrumental rather than a consummatory goal, Resource Adequacy lies outside of most need hierarchies that have been proposed.

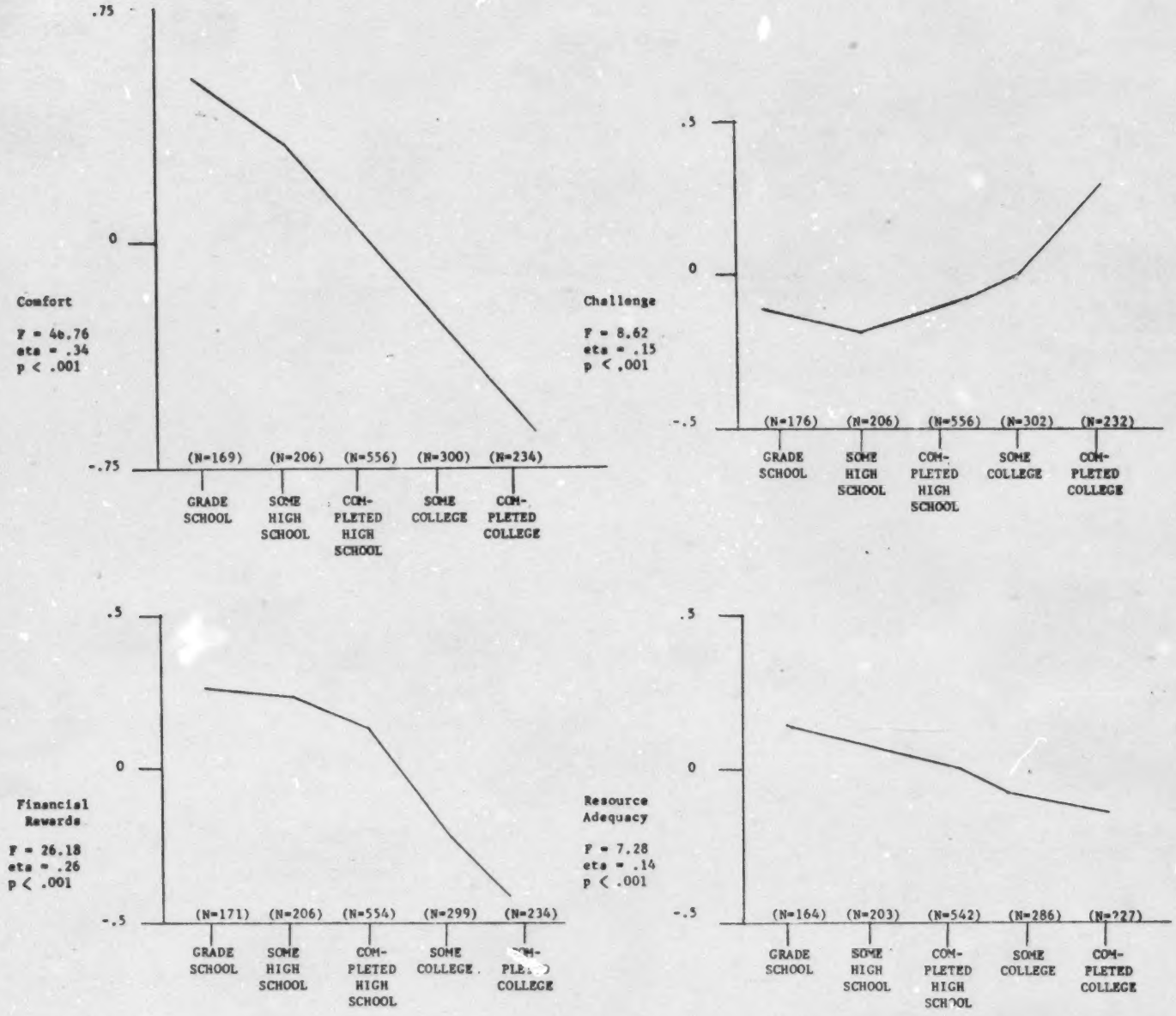


Figure 6

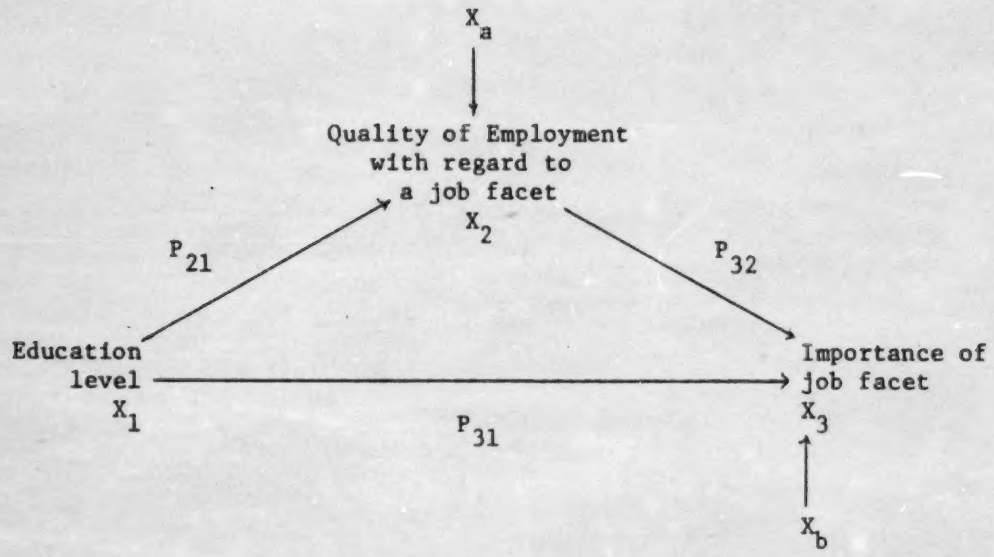
Importance of Job Aspects, by Education Level

SOURCE: 1972-73 Quality of Employment Survey

with regard to the same facets. On one hand, it has been suggested that the better a worker's job is on some dimension, the greater are the chances that he or she will regard that dimension highly. The contrary deprivation argument maintains that people will prize most highly that which they lack. Further complicating the matter is the argument that when certain types of rewards are provided, the incentive value of other types of rewards is diminished. Empirically, the correctness of the various arguments remains unresolved, and both positive and negative correlations have been reported between the importance assigned to job facets and how well rewards are provided with respect to those facets.

Given a correlation, whatever its direction, between importance and quality of employment, plus the fact that education level was also associated with quality of employment (Figure 5), there remained the possibility that the relationships between education level and importance shown in Figure 6 were due entirely to the intervention of quality of employment.

To examine this possibility the same procedures were used as were reported on pages 38-40 for determining the direct impact of an independent variable on a dependent one, as well as its indirect effect through a second independent variable. This path analysis assumed that (1) both education level and quality of employment influence the importance ratings of job facets, and that these are one-way influences; (2) education level influences quality of employment, and this is a one-way influence; and (3) residual variables are uncorrelated. The path model may be represented as follows:



The above model was tested for each of the four general aspects of jobs, Comfort, Challenge, Financial Rewards, and Resource Adequacy. The relevant path coefficients are presented in Table 5.

As has already been suggested by the eta coefficients in Figure 6, the path coefficients in Table 5 show a direct effect of education upon the importance attached to all four job facets, particularly Comfort and Financial Rewards. On the other hand, the indirect effects of education level upon importance, via the intervening mechanism of quality of employment were nonexistent. There was at most a small indirect effect confined to Challenge.

Moreover, the path coefficients linking quality of employment and importance were generally quite low (Comfort = .00; Challenge = .25; Financial Rewards = -.04; Resource Adequacy = .07).* This suggests that,

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*The zero-order correlations between quality of employment and importance were: Comfort = .04; Challenge = .28; Financial Rewards = -.11; Resource Adequacy = .07.

Table 5

Path Coefficients among Education Level, Quality of Employment, and the Importance Attached to Four Aspects of JObs
(N ∿ 1380)

Aspect of job	Path Coefficients Predicting Importance Ratings of job facets from education level	
	Direct[a] (P_{31})	Via quality of employment[b] ($P_{21} \times P_{32}$)
Comfort	-.33	.00
Challenge	.13	.08
Financial rewards	-.24	-.01
Resource adequacy	-.13	.00

[a] P_{31} is the zero-order Pearson r relating education level and job satisfaction

[b] P_{21} is the zero-order Pearson r relating education and quality of employment; P_{32} is the beta weight associated with quality of employment obtained from a multiple regression that used quality of employment and education level to predict importance.

contrary to the suggestion advanced above, the importance of a job facet was not affected by how well rewarded one was with regard to that facet, the single possible exception being Challenge.

The effects of education upon the importance assigned to job facets were generally of limited magnitude, the eta coefficients indicating that most of the variance in importance ratings remained to be explained, Perhaps more important than level of education in determining how important one regards job facets is the particular type of education that one has experienced. Other obvious sources of influence are those agents of socialization that operate outside the educational system. Even the observed associations between education level and the importance of job facets can only suggest, but not confirm, any causal relationship. To do so requires longitudinal data obtained from panels of people as they advance educationally. It may in fact be the case that the observed relationship between education level and the importance of job facets is spurious. The very circumstances that affect one's work-related values may be the same as those that determine the amount and type of education that one receives.

In conclusion, the fact that increasing levels of education were not associated with increasing amounts of Comfort and Resource Adequacy (Figure 5) should probably not be a matter of great social concern, since more highly educated workers seem to lose some interest in these aspects of work. Comfort and Resource Adequacy therefore seem to play little part in the real, but small, associations between education and overall job satisfaction reported in Table 2 (pages 19 and 20). These two job aspects may be able to explain why the relationship between education

and job satisfaction is generally so low, but they are unable to explain the increase in satisfaction between "some college" and "completed college" levels, but not between other levels.

A partial explanation of the latter is provided by the Financial Rewards measures. Financial Rewards appear to be allocated on the basis of educational credentials rather than on the basis of years of education attained. At the same time, the importance of Financial Rewards declines with increasing education. This decline would serve to reduce the impact upon job satisfaction of the credentialized allocation of Financial Rewards at college levels. The situation in which credentialized allocation is likely to create greatest dissatisfaction is where: a person has attained the skills commensurate with his or her education; has experienced an increase in level of aspiration with regard to a particular reward; has increased the importance that he or she assigns to that reward; but is allocated the reward not on the basis of acquired skills, but on the basis of the educational credentials that he or she possesses. This situation is most closely approximated in the case of Challenge, but even there the picture is not entirely clear. It nevertheless provides some explanation of the unexpected dissatisfaction of those people with some college training but no college degree. Furthermore, it suggests a real, and perhaps even growing lack of integration between the educational and economic systems. If the average educational level of the American worker continues to increase, there is likely to be an increase in the numbers of people who place less emphasis upon wages and more emphasis upon how challenging, personally rewarding, and self-developing their jobs are. It remains to be seen whether the economic system can

meet these evolving needs by providing jobs that are attuned to the workers who must be relied upon to fill them.

IMPLICATIONS

Implications for future research

Figure 1 (page 11) of this report presented a model that might be used to examine the relationship between educational inputs and occupational outputs measured in terms of job satisfaction. Some of the major causal links in this model were investigated empirically in the analyses described in this report. Notwithstanding obvious problems of measurement, there remain a number of ways in which the proposed causal links in the model can profitably be investigated. These proposed topics of future investigation can serve principally to qualify the conclusions of this report and to raise empirical issues that were either ignored or touched upon too lightly.

1. Formal education selects as well as trains people. As a result of students' terminating their schooling at different times, cross-sectional comparisons among people with different educations are difficult to interpret. For example, have the observed values of a college graduate been developed <u>because</u> of his or her educational experiences? Or did these same values lead the student to try to obtain a college education in the first place? And how do these values differ from those of people who did not attend college? Without answers to these and related questions of self-selection into different educational settings, directions of

causality remain uncertain. But the answers are not easily obtained. They require data obtained from long-term panel studies of students as they advance educationally, leave school at different ages, and obtain different types of entry-level employment. Especially useful in this regard may be the current ten-year, follow-up studies of the two Ohio State University samples of young people that were described in this report. Although these studies treat work-related values and attitudes rather superficially, they may nevertheless be able to disentangle some of the effects of a student's education from those of his or her early employment experiences.

2. According to the model in Figure 1 (page 11), characteristics of workers' backgrounds may influence both their educational attainments and access to jobs. For example, young people from wealthy families may not only secure more and better education than others, but they may also secure better jobs once they begin working. As a result of such considerations, a nagging question of confounding variables remains unresolved: To what extent may even the small observed relationship between education level and job satisfaction be the product of yet other variables? The model in Figure 1 suggests some variables that may intrude and render spurious the observed relationship. On the other hand, it is also possible that some third variable may be <u>suppressing</u> the correlation between education level and job satisfaction. As a result, the correlations presented in this report may underestimate the true magnitude of the relationship.

3. The analyses described in this report dealt almost exclusively with level of education, touching only in passing upon its quality, and not at all upon its type. But inferences about the effects of education level are often based upon certain assumptions about the modal type and quality of education experienced by people who have attained a particular level. These assumptions could more profitably be cast as testable hypotheses involving the separate or combined occupational payoffs of educational level, type, and quality. Further complicating matters is the possibility that the type and quality of one's education may not become occupationally relevant until a certain level has been attained. Among those who have only been graduated from elementary schools, differences in the type or quality of their educations may be found to have little impact upon their occupational futures. Among high school graduates, type of high school curriculum may become important, but its quality less so. And at the highest degree levels both specialization and the quality of one's graduate training may affect one's subsequent occupational success. In short, the effects of education level, type, and quality may be progressively unfolding ones rather than being simply additive.

4. The only occupationally relevant motivational effects of education considred in this report involved the relative importance that people attached to different aspects of work. But, according to the model in Figure 1, other--and perhaps more

critical aspects of motivation--remain to be investigated. These include levels of occupational aspirations, expectations about the occupational rewards that one is likely to receive, and the choice of reference groups or other standards for evaluating the equity of occupational rewards. It seems particularly vital to distinguish between the importance attached to a job facet and one's level of aspiration with regard to that facet. The data analyzed in this report suggested that education may have reduced the importance that workers attach to having comfortable and financially rewarding employment. This does not mean, however, that the corresponding aspirations of more highly educated workers are necessarily any lower than those of people with less education. Better educated people may attach less importance to pay than do others, but their standards for judging the adequacy of their pay may be considerably higher.

In studying the effects of education upon levels of aspiration, the same questions arise that nag the investigation of the effects of education upon the importance of job facets? Does education directly affect levels of aspiration? Or does education affect the type of job that one secures, which <u>in turn</u> affects one's level of aspiration? The data presented in this report suggested that the former, direct effect is more likely when importance ratings of job facets are concerned. Whether the effects of education upon occupational levels of aspiration are similarly direct remains to be seen.

5. Most of the previous empirical work concerning the occupational payoffs of education has concentrated on pecuniary rewards. The studies and data reviewed in this report have emphasized rewards at the other extreme of intangibility--job satisfaction, with all its attendent problems of measurement and interpretation. More information is needed concerning the payoffs of education in terms of the many different facets of quality of employment that reflect neither extreme.

Policy implications

The above recommendations for future research implicitly identify shortcomings of the research reported in the preceding pages. In light of any such shortcomings, its seems premature, even presumptuous, to suggest that our findings have any implications for the policies of educational institutions or employing establishments. There are, however, several action implications that may withstand future replications and elaborations of the data we have presented.

The first such recommendation is partly an exhortation and partly a warning: Pay greater attention to the present and future occupational needs of the overeducated. Many of the drawbacks of education in terms of dissatisfaction with work can be explained by too many people--especially those with more than high school educations--having too much education for the jobs they are doing. Moreover, this conclusion is confined to paid employment and does not even consider the millions of women whose diplomas and degrees

have "qualified" them for unpaid employment in the home.

Recognizing the problem of overeducation does not deny that employers may be hurting for lack of qualified personnel for some occupations. Nor does it deny the role of education in increasing employment opportunities for the socially and economically disadvantaged. There are certainly widespread educational deficits that require compensation for the benefit of employers and employees alike. But providing improved education for those who might otherwise lack what is necessary for occupational survival should not imply that "more" is always "better" when it comes to the occupational payoffs of education.

The economic and educational systems are therefore faced with simultaneous problems of inadequacy and excess: the older, lingering problem of numbers of people not being sufficiently well-trained to secure steady, satisfying employment and the emerging problem of overeducation. The strategies employed to secure better congruence between workers' educations and their jobs depends upon which problem is being attacked. A short-term solution to this mismatching of workers and jobs would require employers to re-examine the educational requirements they establish for jobs. Requirements could be more realistically based upon skills acquired rather than diplomas secured. Further in need of modification are educational requirements for job entry that are greater than those needed for satisfactory performance. Such requirements not only bar otherwise qualified personnel from jobs

they might desire, but, ironically, fills these very jobs with people who may be dissatisfied with them because they are too highly educated. Unfortunately, there is little motivation for employers to adopt such solutions in periods such as the present one when there is high unemployment and when many women who have not hitherto done so are seeking entry into the paid labor force. A buyer's market for labor provides little inducement for the buyers to change their practices.

Such solutions to problems of educational and occupational mismatching can be successful only if it can be safely assumed that the supply of available jobs is commensurate with the educational attainments of the people seeking them. Under this condition the solution is principally a matter of shifting people into the right slots. To do so is difficult enough, given limitations on geographical mobility and the discreteness of labor markets. But are there enough such "slots" to go around? Suppose that one could estimate accurately the essential educational requirements of every job in America. Suppose, in addition, that one could also estimate the educational attainment of everyone who either is in or would like to be in the paid labor force. How well would the two estimates match? Would any mismatching be in the direction of an overall educational deficit or surplus? Would a similar matching procedure based on estimates of <u>future</u> job requirements and educational attainments indicate a projected educational deficit or surplus?

Available answers to such questions of how things stand at present are hardly precise, and the answers to questions about what may happen in the future are even less so. Considerable speculation, bolstered by some indirect evidence, suggests, however, that the existence of an overeducated labor force may become an increasing problem in the future if it is not one already.

What can be done about this problem? On management's part a review and revision of educational requirements for jobs, coupled with improved selection and placement practices, may be able to remedy short-range mismatchings of workers and jobs. But the longer-range prognosis is not very good. What might be required instead are more substantial alterations in the content of jobs that workers are currently doing or are likely to be doing in the future. Job enlargement, job enrichment, and similar alterations of the content of jobs have become the chic solutions of many of the problems faced by workers and their employers--especially problems involving worker dissatisfaction. While such solutions have perhaps been touted excessively as panaceas for employment problems, they may nevertheless be particularly well suited to the problem of overeducation. The intention of job enlargement and job enrichment is to make jobs more intellectually demanding and self-developing for their occupants. In other words, job enlargement and job enrichment emphasize precisely those aspects of jobs that the data in this report have shown to be relatively more important to more highly educated workers.

There are also some changes that might be considered by educators as ways of reducing overeducation and of providing workers with educations that are better tuned to their likely occupational experiences. First, a reassessment of the role and timing of career-oriented education in students' lives seems in order. We suggest that less emphasis be placed in primary and secondary schools upon education that is specifically career-oriented. Instead, greater emphasis should be placed upon easily generalized skills, anticipating that a worker will be making many job changes in life, especially in the years immediately after leaving school. Speaking English well and being able to think logically are generalizable skills; woodworking and automobile repairing are not. While teaching a student the latter skills may suit his or her adolescent interests and provide the student with an entry-level job, the student runs the danger of becoming obsolete when these skills become outmoded. The short-term occupational pay-offs to a student of receiving such highly specialized training may be appreciable, but the training may in the long run do little more than limit the student occupationally.

Instead, occupationally specialized training should be offered to people at the times and places they need it most. For those students who are in college to prepare for professional or technical careers, this would require little change in current educational practices. The changes would be more extensive for most members of the labor force because they would be receiving occupationally specialized training later in life and in settings more closely tied

to their places of employment.

At present the implicit contract between students and the educational system is valid only up to a certain age, and education must be taken in one, continuous swallow. We suggest that the termination date of the contract be extended and that the contract be transformed into a lifetime one. During the early periods of the contract the emphasis would be upon general education and upon preparing the student to be an effective, responsible adult. No pretense would be made that the student's education would guarantee him or her a good job--other than that which might be implied by the words "effective" and "responsible." Training for specific jobs or career lines would be reserved until it became necessary for the worker to receive the training, most commonly when the worker begins to contemplate changing his or her job or employer.

Finally, it seems advisable to stop the hard sell to students wherein every unpleasant thing in school is justified in terms of its necessity for getting the student a good job later on. Granted, education has been an effective means of social advancement for many groups in our society, and even today many groups are occupationally disadvantaged because of impoverished educations. But the occupational payoffs of education involve probabilities, not certainties. In terms of job satisfaction the probabilities are low indeed. To continue representing the occupational payoffs of education as guaranteed may only produce an increasingly disillusioned labor force.

REFERENCES

Alexander, C. E., & Campbell, E. Peer influences on adolescent educational aspirations and attainments. In Pavalko (Ed.) Sociology of Education. Itasca, Ill.: Peacock, 1968.

Ash, P. The SRA employee inventory--A statistical analysis. Personnel Psychology, 1954, 17, 338-365.

Barnowe, J. T., Mangione, T. W., & Quinn, R. P. Quality of employment indicators, occupational classifi ations and demographic characteristics as predictors of job satisfaction. Paper read at 80th annual meeting of the American Psychological Association, Honolulu, 1972.

Berg, I. Education and jobs: The great training robbery. Boston: Beacon Press, 1971.

Blood, M. Work values and job satisfaction. Journal of Applied Psychology, 1969, 53, 456-459.

Boudon, R. Education opportunity and social inequality: Changing prospects in western societies. New York, Wiley, 1973.

Bull, J. C. Relationship of educational congruence to the occupational attainment process and subsequent satisfaction: A longitudinal study. Ames, Ia.: Iowa State University, 1972. (ERIC Document No. ED 087 575)

Cammann, C., Quinn, R. P. Beehr, T. A., Gupta, N. Effectiveness in work roles report 1: Validating quality of employment indicators. Ann Arbor, Mi.: Survey Research Center, 1974, NTIS Document No. 92-26-72-35-1.

Campbell, A., Converse, R., & Rodgers, W. Perceived quality of life. New York: Russell Sage, in press.

Coleman, J. S. et al. Equality of educational opportunity. Washington, D.C.: U.S. Government Printing Office, 1966.

Coleman, J. S., et al. White and black careers during the first ten years of work experience: A simultaneous consideration of occupational status and income changes. Baltimore: Johns Hopkins University, Center for the Study of Social Organization of Schools, 1971. (ERIC Document No. ED 061 455)

Cooke, R. A., Moch, M. K., & Taber, T. D. Evaluation of the Productive Employment Search Program. Michigan Department of Labor Project. Ann Arbor: University of Michigan, 1974.

Davis, J. The campus as a frog-pond. American Journal of Sociology, 1966 72, 17-31.

Dictionary of occupationsl titles--Volume II, Occupational classification. Washington, D.C.: U.S. Government Printing Office, 1965.

Dreeben, R. On what is learned in school. Reading, Ma.: Addison-Wesley, 1968.

Duncan, G. Nonpecuniary work rewards: Implications for studies of earnings functions, discrimination and labor union efforts. (Doctoral dissertation, The University of Michigan, 1974.)

Form, W., & Geschwender, J. Social reference basis of job satisfaction: The case of the manual worker. American Sociological Review, 1962, 27, 228-237.

Fulton, M. Education and adaptive capacity. Paper presented at the American Education Research Association annual meeting, 1970. (ERIC Document No. ED 042 261)

Gottlieb, D. Teaching and students: The views of Negro and white teachers. In Pavalko (Ed.), Sociology of Education. Itasca, Ill.: Peacock, 1968.

Harvard Educational Review. Special issue on Equal Educational Opportunity, Winter 1968, 38.

Herzberg, F., Mausner, B., Peterson, R., & Capwell, D. Job attitudes: Review of research and opinion. Pittsburgh: Psychological Services of Pittsburgh, 1957.

Inskeep, G. C. Statistically guided employee selection: An approach to the labor turnover problem. Personnel Journal, 1970, 49, 15-24.

Jencks, C. Inequality: A reassessment of the effect of family and schooling in America. New York: Basic Books, 1972.

Johnson, L., & Johnson, R. High school preparation, occupation and job satisfaction. Vocational Guidance Quarterly, June 1972, 287-290.

Kahn, R. L., Wolfe, D., Quinn, R., Snoek, D., & Rosenthal, R. Organizational stress: Studies in role conflict and ambiguity. New York: Wiley, 1964.

Kessler, M. S. Job satisfaction of veterans rehabilitated under Public Law 16. Personnel and Guidance Journal, 1954, 33, 78-81.

Kilpatrick, F. P., Cummings, M. C., Jr., & Jennings, M. K. Source book of a study of occupational values and the image of the federal service. Washington, D.C.: The Brookings Institute, 1964.

Klein, S, M. & Maher, J. R. Educational level, attitudes and future expectations among first level management. Personnel Psychology, Spring 1968, 21, 43-53.

Kornhauser, A. N. & Sharp, A. A. Employee attitudes: Suggestions from a study in a factory. Personnel Journal, 1932, 10 (6), 393-404.

Larsen, J. M. & Owens, W. A. Worker satisfaction as a criterion. Personnel Psychology, 1965, 18, 39-47.

Lawler, E. & Suttle, J. A causal correlational test of the need hierarchy concept. Organization Behavior and Human Performance, 1972, 7, 265-287.

MacKinney, A. C. & Wollins, L. Validity information exchange. Personnel Psychology, Autumn 1959, 12, 482-483.

Manpower report of the President. Washington, D.C.: U.S. Government Printing Office, 1974.

Maslow, A. P. Job factor attitudes and preferences affecting the relative advancement and turnover of men and women in federal careers. Washington, D.C.: American Psychological Association and the Civil Service Commission, 1970. (ERIC Document No. ED 043 045)

Minor, F. J. The prediction of turnover of clerical employees. Personnel Psychology, Autumn 1958, 11, 393-402.

Morse, N. Satisfaction in the white-collar job. Ann Arbor, MI.: Survey Research Center, 1953.

Oaklander, H. Some unanticipated effects of advanced education on a critical manpower resource. The Inservice Teacher, 1969. (ERIC Document No. ED 044 350)

Picon, J. S. Black and white variations in a model of the occupational aspiration process. Journal of Negro Education, 1973, 42, 117-122.

Quinn, R., Seashore, S., Kahn, R., Mangione, T., Campbell, D., Staines, G., & McCullough, M. Survey of working conditions: Final report on univariate and bivariate tables. (Document No. 2916-001) Washington, D.C.: U. S. Government Printing Office, 1971.

Quinn, R., Staines, G. & McCullough, M. Job satisfaction: Is there a trend? (Manpower Research Monograph No. 30) Washington, D.C.: U.S. Department of Labor, 1974.

Quinn, R. & Shepard, L. The 1972-73 Quality of Employment Survey: Descriptive statistics with comparison data from the 1969-70 Survey of Working Conditions. Ann Arbor, Mi.: Survey Research Center, 1974.

Sharp, E. F. & Kristjanson, G. A. Manitoba high school students and drop-outs. Winnipeg: Manitoba Department of Agriculture, 1965. (REIC Document No. ED 073 867)

Singh, T. & Baumgartal, H. Background factors in airline mechanics' work motivations: A research note. Journal of Applied Psychology, 1966,

St. John, N. The elementary school as a frog-pond: Self-concept, sense of control and social content. Social Forces, 1971, 49 (4), 581-595.

Sinha, D. & Sarma, K. C. Union attitudes and job satisfaction in Indian workers. Journal of Applied Psychology, 1962, 46, 247-251.

Taylor, J. & Bowers, D. Survey of Organizations. Ann Arbor, Mi.: Center for Research on Utilization of Scientific Knowledge, 1972.

Taylor, K. & Weiss, D. Prediction of individual job termination from measured job satisfaction and biographical data. Journal of Vocational Behavior, April 1972, 2, 123-132.

Tiffin, J., Parker, B., & Habersat, R. The analysis of personnel data in relation to turnover on a factory job. Journal of Applied Psychology, 1947, 31, 615-616.

Trumbo, D. Individual and group correlates of attitudes toward work related change. Journal of Applied Psychology, 1961, 45, 338-344.

Vaughn, W. & Dunn, J. An investigation into the relationship between education and job satisfaction in an on-going organization. Denton, Tx.: North Texas University, 1972.

Vollmer, H. & Kinney, J. Age, education and job satisfaction. Personnel, 1955, 32, 38-43.

Wherry, R. An orthogonal re-rotation of the Baehr and Ash studies of the SRA Employee Inventory. Personnel Psychology, Autumn 1954, 7, 365-381.

Wood, D. & Lebold, W. The multivariate nature of professional job satisfaction. Personnel Psychology, 1970, 23, 173-189.

APPENDIX A

SEARCH PROCEDURES USED IN SELECTING RESEARCH REPORTS TO BE REVIEWED

Two sources, Current Index of Journals in Education (CIJE) and The Educational Research and Information Center (ERIC) provided a valuable starting point. For index purposes the following major descriptors were used: jobs, job satisfaction, education, occupations, vocations, and surveys. In addition to these major descriptors, such minor descriptors as attitudes, values, aspirations, morale, demographic, biographical, individual, criterion of, and tenure were used.

The immediate problem stemming from this index review was that each discipline provided literally hundreds of possible studies to examine. At this point, a number of more definitive criteria for journal and study selection had to be made. The following criteria helped in the selection process and guided further search efforts:

a. Based on availability and library resources a representative research journal from each subject matter area within the field of education would be reviewed.

b. Outside the field of education, major journals from the disciplines of psychology, sociology and applied behavioral sciences would be selected for review.

c. Beginning with the most current issues, each journal would be searched for a five-year period (1969-1973).

d. For those journals that provided us with relevant research findings or that traditionally report job satisfaction studies, a thorough review would be conducted for the period from 1958 to 1974. We felt that Herzberg, Mausner, Peterson and Capwell's 1957 review of job attitude research would already have identified most significant studies prior to 1958.

e. Relevant bibliographical references from studies reviewed would be checked regardless of the publication date of the reference.

f. Only studies whose samples had any variation on our independent variable would be included in the analysis.

g. Studies that included education as a facet of a more inclusive factor such as job adjustment, occupational mobility and the like, would be included in the analysis.

A complete list of journals and indices searched with inclusive dates is included in Table A1. In addition a card file indexed by journal title and author has been maintained for every bibliographical reference source reviewed.

In order to organize the findings in a consistent way, further refinements to the following criteria were recorded for each of the studies reviewed.

a. Method of selection of respondents--number of subjects in the sample; type of subgroup (i.e., managers, blacks, males, females, white or blue collar, etc.); method of selection (census, random, stratified or cluster sampling); degree of representativeness of the entire population; range of education and job satisfaction covered by those selected for the study.

b. Design--variables in the analysis (independent, intervening, dependent); variables controlled in the analysis; type of statistical analysees performed.

c. Definition of measures--(1) operationalization of the two major variables--education as number of years, categories or levels, quality (i.e., measured through amount of interest in books; student/teacher ratio; student / counselor ratio; teacher qualifications; student attitudes toward their education); type (specific curriculum)--job satisfaction as with regard to the job in general (facet free) or specific job facets; (2) operationalization of any other major variables included in the analysis; (3) tests on reliability and validity; (4) reported reliability.

d. Results--intensity and direction of the relationships found; controls established for each reported relationship; definition of education and job satisfaction reported for each given relationship.

The findings thus summarized are presented in the following Appendix.

APPENDIX B

SUMMARY OF SOURCES USED IN LOCATING EXISTING RESEARCH ON THE RELATIONSHIP BETWEEN EDUCATION AND JOB SATISFACTION

Journals	Dates searched
American Educational Research Journal	1/69 - 12/73
American Behavioral Scientist	1/69 - 2/74
American Sociological Review	1/61 - 12/73
Behavioral Science	1/69 - 12/73
College & University Journal	1/69 - 12/73
College & University Personnel Journal	1/70 - 12/72
Education	1/69 - 12/73
Educational Administration Quarterly	1/69 - 12/73
Educational & Psychological Measurement	1/69 - 6/74
Educational Research	1/58 - 12/72
Educational Researcher (new publication)	1/72 - 12/73
Harvard Educational Review	1/69 - 12/73
Industrial & Labor Relations Review	1/69 - 7/74
International Review of Education	1/69 - 12/73
Journal of Applied Behavioral Science	1/69 - 12/73
Journal of Applied Psychology	1/58 - 12/73
Journal of Applied Social Psychology	1/69 - 12/73
Journal of College Student Personnel	1/69 - 12/73
Journal of Educational Psychology	1/69 - 12/73
Journal of Social Psychology	1/69 - 12/73

Journals	Dates searched
Journal of Counseling Psychology	1/69 - 12/73
Journal of Educational Research	1/69 - 12/73
Monthly Labor Review	1/67 - 12/73
Occupational Outlook Quarterly	1/69 - 12/73
Personnel	1/58 - 12/73
Personnel Journal	1/58 - 12/73
Personnel Psychology	1/58 - 12/73
Personnel & Guidance Journal	1/58 - 12/73
Psychological Bulletin	1/58 - 12/73
Review of Educational Research	1/69 - 12/73
Vocational Guidance Quarterly	1/69 - 6/74
School Review	1/69 - 12/73
Sociology of Education	1/69 - 12/73

Indices

Abstracts of Research & Related Materials in Vocational & Technical Education (ARM)	1/67 - 12/73
Current Index to Journals in Education (CIJE)	1/69 - 12/73
Dissertation Abstracts	1/69 - 12/73
Educational Research & Information Center Index (ERIC Clearing House)	1/69 - 12/73

Lockheed Information Retrieval System

For index purposes the following major descriptors were used: Jobs, Job satisfaction, Education, Occupations, Vocations, Surveys.

Within the major descriptors the following minor descriptors were useful: Attitudes, values, demographics morale, individual's criterion of, tenure.

APPENDIX C

MAJOR CHARACTERISTICS OF STUDIES OF EDUCATION, JOB SATISFACTION, AND RELATED VARIABLES*

STUDY	PURPOSE	SAMPLE		DESIGN			RESULTS
		Subjects	Selection	Independent variables	Dependent variables	Statistical analysis	
Kornhauser and Sharp (1932)	To understand the relations among employee attitudes, as well as their causes and effects	200 women working in a paper products manufacturing plant	The universe was selected.	Demographic variables; education, measured as years of schooling; individual psychological variables; efficiency ratings	Employee attitudes (general and facet-specific factors)	Correlation	There was no significant correlation between work attitude scores (general or specific) and intelligence, age, schooling or marital status.
Morse (1953)	To understand the relationship between two criteria of organizational effectiveness: employee satisfaction and productivity	815 white collar clericals and supervisors in an insurance company	Random	Type of work; length of service; salary level; age; sex; marital status; educational level (high school, business or trade schools, college in years)	Intrinsic job satisfaction; company involvement, financial and job status satisfaction; pride-in-group performance	Contingency tables; correlation	Type of work, length of service, salary level, age, sex, marital status and educational level did not relate significantly nor in the same direction to the dependent variables. Education was related negatively, but insignificantly to involvement and to both financial and job status satisfaction. No relationship was found between education and intrinsic satisfaction.
Ash (1954)	To validate the Science Research Associates Employee Inventory	184 production maintenance office sales and supervisory personnel in a steel fabricating plant	The universe was selected.	Age; sex; marital status; dependency status; intelligence; experience (years); education (years); several indices measuring job performance, satisfaction, relation with others. Independent and dependent variables were not distinguished		Factor analysis	Attitudes of people toward their jobs were not related to education.

APPENDIX C--(continued)

STUDY	PURPOSE	SAMPLE		DESIGN			RESULTS
		Subjects	Selection	Independent variables	Dependent variables	Statistical analysis	
Kessler (1954)	To determine the nature and extent of the differences between a group of rehabilitated veterans who were satisfied and a group who were dissatisfied	1,078 veterans rehabilitated under Public Law 16	The universe was selected.	Age; length of service; percent disability; highest grade of educational attainment; type of training facility; marital status; number of dependents; job classification; mental ability; interests; aptitudes; socio-economic status	Facet specific job satisfaction	Correlation	Among those who were not working at the jobs for which they were rehabilitated the satisfied group appeared to have a higher level of education than the dissatisfied ones. No relationship between education and satisfaction was found in groups who were working at jobs for which they were rehabilitated.
Wherry (1954)	To re-analyze data presented by Ash (1954) and Baehr (1954)	481 (134 and 163 from Baehr and 184 from Ash)	Not reported	Age; education; experience; intelligence; satisfaction (Brayfield-Rothe scale)	Employee attitudes (Science Research Associates Employee Inventory)	Factor analysis	There was a positive but nonsignificant relation between education and general job satisfaction.
Vollmer and Kinney (1955)	To predict job satisfaction from age and education	2,257 civilian ordnance employees	Not reported	Age; education (grammar school, high school, college)	General job satisfaction	Contingency tables	Negative relationship between education and satisfaction
Form and Geschwender (1962)	To test hypothesis about reference groups for appraisal of life situations	545 manual workers	Replacement random sample (Those who were not manual workers were rejected).	Marital status; age; number of children; tenure; wages; occupational level; education (grammar school or less, at least some high school)	General job satisfaction	Chi-square; correlation	Education was negatively related to job satisfaction
Sinha and Sarma (1962)	To assess attitudes toward union and job satisfaction, and to determine their antecedents	100 blue collar workers in a light engineering factory	Random	Age; education (illiterate, below matric, matric and above); monthly income; marital status; number of dependents; length of union membership	General job satisfaction; attitudes toward union.	Chi-square	No significant association between education and job satisfaction

APPENDIX C--(continued)

STUDY	PURPOSE	SAMPLE		DESIGN			RESULTS
		Subjects	Selection	Independent variables	Dependent variables	Statistical analysis	
Kahn et al. (1964)	To study the effects of role conflict and ambiguity in occupations	1,300 adults living in households	Multi-stage probability sample	Age; sex; unemployment status; education (completed grade school, some high school, completed high school, some college, completed college)	General job satisfaction	Contingency tables	Among wage- and salaried-men, the higher percentage dissatisfied were those who had some high school or some college. The highest percentage of dissatisfied among women were those who had completed high school.
Larsen and Owens (1965)	To predict workers' job satisfaction	500 crew members of 16 ships	Not reported	Age; number of dependents; education (mean years of schooling); years of service; department; type of position	Satisfaction factors; composite scale, weighting satisfaction by importance	Multiple regression	Significant negative beta weights for education
Klein and Maher (1968)	To determine the relationship between education and job related attitudes	727 first-level managers in an electronics manufacturing plant	Not reported	Expected contribution to company; expected salary increase; expected advancement; age; skill; education (college, non-college, collapsed from six categories ranging from grade school to graduate degree. Subjects were grouped according to whether they attended school rather than if they graduated from it)	Facet-specific and general job satisfaction	Analysis of variance	Education was significantly related to subjects' expected contribution to company, salary increase, satisfaction with benefits, satisfaction with the job in general. Non-college people and consistently lower satisfaction than people with college.
Blood (1969)	To predict job satisfaction from work values	448 airmen and non-commissioned U.S. Air Force officers	Not reported	Age; education (undefined); tenure; father's occupation "Protestant ethic"; "non-Protestant ethic"	Satisfaction with work, supervision, people, pay, promotion (Job Description Index), general life and job satisfaction	Multiple correlation; regression	There was no significan relation between education and all dependent variables.

APPENDIX C--(continued)

STUDY	PURPOSE	SAMPLE		DESIGN			RESULTS
		Subjects	Selection	Independent variables	Dependent variables	Statistical analysis	
Wood and Labold (1970)	To examine the dimensionality of job satisfaction	3234 engineering graduates	Random	Engineering function; field of engineering; degree year of B.S.; employee's industrial classification	General job satisfaction	Factor analysis	The more recent graduates were significantly more dissatisfied with their current jobs. Within degree fields, those with bachelor degrees were slightly more dissatisfied than those with masters or doctor's degrees.
Johnson and Johnson (1972)	To assess the relationship between curriculum of a comprehensive high school and the occupations of graduates	1,191 graduates of three high schools	The universe was selected.	High school curriculum or area of study; satisfaction with high school preparation; post-high-school education	General job satisfaction	Contingency tables; chi-square	1) Women in occupations that matched their high school curriculum had significantly greater job satisfaction than women in occupations that did not match their high school curriculum. 2) For both men and women satisfaction with high school preparation was significantly greater for the groups with occupation that matched their high school course of study than for the non-matched group. 3) Those who were satisfied with their jobs had higher rankings in their high school class and rated their high school preparation better than the dissatisfied group. 4) Students with educations beyond high school were more satisfied with their jobs than those without education beyond high school. The most satisfied were those with technical training, rather than college or business training.

APPENDIX C—(continued)

STUDY	PURPOSE	SAMPLE		DESIGN			RESULTS
		Subjects	Selection	Independent variables	Dependent variables	Statistical analysis	
Vaughn and Dunn (1972)	To determine the relationship between education and job satisfaction	167 library employees	Not reported	Education (for men, five levels; for women, four levels)	Job factors index	Density functions	Inconclusive findings on the relationship between education and job satisfaction
Cooke, et al. (unpublished)	To evaluate a program of training in job-search techniques	154 underemployed workers attending a job seeking course	Non-random	Three levels of education: high school (years 9-12), college (years 13-16), post-college (years 17-20)	Facet specific job satisfaction; general job satisfaction	Correlation; analysis of variance	No significant association between education and either facet specific or general job satisfaction
Tiffin, Fowler, and Habersat (1947)	To determine the relationship between personal data and job tenure	87 male employees in an optical manufacturing firm	Not reported	Age; years of formal education; height; weight; marital status; number of dependents	Job tenure	Contingency tables	There was an inverse relationship between education and tenure
Minor (1958)	To construct a selection instrument that would predict probable turnover for female clerical applicants	440 female clerical workers in an insurance company	Random sample with two sub-samples (one for cross-validation)	32 variables, 24 of which were biographical, among these: last type of school attended; major field of high school; highest level of education completed	Voluntary turnover	Factor analysis	From all educational variables, only major field of high school was significantly related to tenure and therefore included in the instrument
McKinney and Wollens (1959)	To predict productivity, performance, and job termination	49 female coding and file clerks in a publishing company	Not reported	Wonderlic Personnel Tests; Hay Test and King Factor Test of aptitude; age of children; age; education (undefined); number of previous jobs; marital status; husband's employment status	Voluntary termination; involuntary termination; overall performance rating; productivity rating	Correlation	Education was inversely related to both types of termination, performance, and productivity
Trumbo (1961)	To investigate individual attitudes or situational factors associated with different attitudes of work groups	278 supervisory and non-supervisory insurance company personnel	Not reported	Job investment; age; sex; tenure; job involvement; job adjustment; general ability; freedom from anxiety; education (less than high school, high school, less than college, college)	Attitude toward change	Analysis of variance	There was a positive monotonic relation between amount of education and attitude toward change

APPENDIX C—(continued)

STUDY	PURPOSE	SAMPLE		DESIGN			RESULTS
		Subjects	Selection	Independent variables	Dependent variables	Statistical analysis	
Sharp and Kristjanson (1965)	To investigate the vocational and educational aspirations of Canadian youth	2,253 Canadian high school students	Area sampling	Intelligence; academic achievement; socio-economic status; family background; non-family experiences (teacher encouragement, extra-curricular activities, etc.)	Level of occupational aspiration; level of educational aspiration; high school completion	Chi-square; contingency coefficient	Best predictors of educational and vocational aspirations were past academic achievement, followed by intelligence. A strong positive relationship existed between staying in school and levels of occupational and educational aspirations. Family background and socio-economic status were positively related to staying in school.
Singh and Baumgartel (1966)	To investigate the contributions of age, length of service, and amount of education to workers' motivation	340 non-supervisory airplane mechanics	Panel	Age; length of service; education (undefined)	Advancement index (based on importance rating by workers); stability index (based on workers' motivation ratings)	Chi-square, controlling on age and length of service	Education was positively and significantly related to advancement index but not to the stability index.
Berg (1970)	To reanalyze Roper data on blue-collar worker's aspirations and job satisfactions	2,139 men below the rank of foreman, selected from 16 industries across the U.S. (type unspecified)	Stratified quota sample	Education level (number of years)	Aspirations; general job satisfaction; skill level	Rank correlation	Education was strongly associated with aspirations. Although education was weakly and sometimes insignificantly and inversely associated with work satisfaction, the effects of education were greatest among higher-aspiring workers. Skill levels consistently predicted satisfaction and dissatisfaction. People with low skill jobs were dissatisfied; the percentage satisfied increased in each category of increasing skill. Dissatisfaction was more closely tied to skill level among better educated employees than it was for the total sample.

APPENDIX C--(continued)

STUDY	PURPOSE	SAMPLE		DESIGN			RESULTS
		Subjects	Selection	Independent variables	Dependent variables	Statistical analysis	
Fullan (1970)	To determine the role of education in orientation to change	2,352 Canadian industrial workers selected from six industries, 17 plants	Random in three plants; entire universe in 14 plants	Level of education (grade school or less, some high school, high school, post high school); type of education (technical, academic)	Openness toward general change, job change, and technical change; authoritarianism; conformity; open-mindedness; mobility orientation; interest in work; control over pace; responsibility; security; contact with others	Contingency tables	Level of education was consistently and positively related to openness toward change on eight scales. Greatest increases in percentages were between grade school and some high school or high school categories. Level of education was positively related to whether worker expected to stay in his or her present job. Level of education was positively related to attitudes toward retraining or leaving present position.
Inskeep (1970)	To determine the relationship of individual characteristics and work performance	1,875 women sewing machine operators in a garment manufacturing firm	Not reported	Age; work experience; level of education (years); house ownership	Tenure; absenteeism; productivity	Contingency tables; chi-square; analysis of variance and co-variance; regression; discriminant function analysis	There was an inverse relationship between education and tenure.
Maslow (1970)	To investigate job factors, attitudes, and preference relative to turnover of men and women in Federal careers	2,882 Federal professional, technical, or administrative employees	The universe was selected for a one-year hiring period	Sex; background characteristics; education (undefined)	Work attitudes; work expectations; tenure	Frequency distributions	Women's turnover was lower in middle employment years and higher in early employment years than men's. Women's employment aspirations tended to be lower than men's. Men and women ranked ideal aspects of the job essentially the same. Among the most important were work itself, personal work accomplishment and salary, while job image, rules and regulations and environmental conditions were ranked as least important. Of moderate importance were relations with co-workers and supervisors.

APPENDIX C--(continued)

STUDY	PURPOSE	SAMPLE		DESIGN			RESULTS
		Subjects	Selection	Independent variables	Dependent variables	Statistical analysis	
Taylor and Weiss (1972)	To test the validity of a set of predictors of job termination	475 regular employees in a discount chain store	Not reported for the total sample. There was a random selection of two subgroups, leavers and stayers, on the basis of the dependent variable, job termination	Eleven biographical items; years of schooling; 27 Minnesota satisfaction questionnaire scales	Job termination	Discriminant functional analysis	Tabular analysis indicates that education did not discriminate between leavers and stayers

*Studies are ordered in the following manner:

(a) Those dealing with the main relationship education and job satisfaction by year of publication.
(b) Those dealing with education and other related factors by year of publication.

APPENDIX D

COMPONENTS OF QUALITY OF EMPLOYMENT INDICATORS

Comfort

Worker had no problems with hours, work schedule, or with working overtime

Worker did not experience dangerous or unhealthy conditions on his or her job

Worker had enough time to do what others expected of him or her

The physical conditions of worker's job were pleasant and comfortable

Worker had no problems with transportation to and from work

Worker mostly determined whether he or she would work overtime on his or her job

Worker did not work excessive hours

Worker's supervisor did not insist that those under him or her work hard

Worker did not have to take much time to get to work

Challenge

Worker's supervisor encouraged new ways of working

Worker's job required high level of skill

Worker's job allowed freedom as to how to do his or her work

Worker's job did not prevent him or her from using skills he or she would like to be using

Worker's supervisor let his or her subordinates alone unless they asked for help

Worker's job required learning new things

Worker's job required that he or she be creative

Worker's job involved doing a variety of things

Worker had exactly the education his or her job required

Worker's job allowed him or her to make a lot of decisions on his or her own

Worker had enough authority to tell others what to do

Worker's employer made available to him or her a training program for improving his or her skills

Financial Rewards

Worker's employer made many fringe benefits available to him or her

Worker desired no additional fringe benefits

Worker was a full time worker who received a high income from his or her job

It was unlikely that worker's job would be automated

It would be easy for worker to find a new job as good as his or her present one

Resource Adequacy

Worker's supervisor maintained high standards in his or her work

Worker's supervisor knew his or her own job well

Worker had enough help from others with whom he or she worked

Worker had enough machinery and equipment to do his or her job well

Worker had enough facts and information to do his or her job well

SOURCE: Cammann et al. (1975)